The results of PIR Center's work are of particular interest for the country's foreign policy agencies, given the relapses into a policy of the unilateral use of force that have caused small countries to feel that security is scarce and pushed large countries towards increasing weapons procurement. The continuing stagnation in the area of disarmament, though no fault of Russia, along with the increasing potential for conflict in the world as a whole are causes for concern.

Russia has inherited the tradition of fighting for disarmament. The decrease in its activities in this area has ended. There is every reason to expect that Russia will present proposals aimed, if not at stopping, then at least at slowing the most dangerous aspirations of those who believe that there are neither commonsensical nor other limits to their ambitions.

Sino-Russian relations are not only more complicated, but also more contradictory than they appear in the speeches of the Russian president and the Chinese Communist Party chairman. Russia's leaders, whatever they say publicly and however strongly they suspect the United States of trying to *drive a wedge* into "model" Sino-Russian relations, will not accept a *strategic* bloc with China.

Demographic threats could be woven into the discourse of the March 2008 presidential campaign. Rather than the Faustian "loans for shares" pact of 1996, or the initiation of a second Chechen campaign in 1999 ahead of the 2000 election, March 2008 could well be characterized by the creation of a new Super-National Russian idea—a unifying strategic rationale on a par with the "Third Rome" ideology of the medieval and early modern period.

The new dangers that have emerged in the international arena, which are primarily linked with the further spread of nuclear weapons and the more acute threat of terrorism, have marginalized the idea of nuclear disarmament as untimely and utopian. It is very seductive to accord the nuclear weapon the role of arbiter-"The Great Inquisitor"-something that is sorely needed to prevent nations from engaging in mortal combat for their own selfish interests. This approach would be tantamount to acknowledging the fatal inevitability of continuing the nuclear arms race and having these weapons continue to spread across the earth's surface.

Sergei Lavrov

Gennady Evstafiev

Dmitri Trenin

Graeme P. Herd
and Gagik Sargsyan

Alexei Obukhov

SECURITY INDEX No. 2 (82), SUMMER/FALL 2007

The Journal of PIR Center

A Russian Journal on International Security

INTERNATIONAL EDITION

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Gennady Evstafiev — DISARMAMENT RETURNS

Andrei Frolov — IRAN'S DELIVERY SYSTEMS CAPABILITIES

Alexei Obukhov — NUCLEAR WEAPONS AND CHRISTIAN ETHICS

Anton Khlopkov — WHAT WILL A NUCLEAR AGREEMENT WITH THE UNITED STATES BRING RUSSIA?

Dmitri Trenin and Vitaly Tsygichko — WHAT IS CHINA TO RUSSIA, *COMRADE OR MASTER*?

A Russian Journal on International Security

Non multa, sed multum

Published since November 1994
(1994–2006 under the title
Yaderny Kontrol)

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THREE CROSS-CUTTING ISSUES: DISARMAMENT, NUCLEAR ENERGY, AND CHINA

I would like to begin with some words of appreciation. I would like to thank our readers who sent the editorial staff their congratulations on the occasion of the publication of the first issue of *Security Index*. Several of these welcome letters and addresses are reprinted at the end of this issue.

We marked the publication of the journal with two presentations that were both vivid and well attended. The first took place in Moscow and was dedicated to the Russian-language publication. One month later a presentation occurred in Geneva, which the PIR Center conducted together with Centre russe d'études politiques and the Permanent Mission of Russia to International Organizations, where we celebrated the international publication of *Security Index* (in English). I was so very pleased to greet so many friends and partners of the PIR Center during these two evenings in two different cities!

No less important to me were the letters from readers who moved from congratulating us to providing specific proposals on how we could be sure not to drop the plan that we raised so highly in our first issue. The editorial board is discussing all of the interesting proposals and ideas, and will soon begin to realize some of them in upcoming issues. I am counting on the future flow of ideas from our readers continuing to be as rousing.

I am also glad to note that serious support to the development of the journal and its distribution in Russia and abroad is being provided by the journal's regional representatives: from Vienna to Vladivostok, from Delhi to Baku, from Tokyo to Wellington, and from Kiev to Algiers. Sometimes it is hard for me, as well as for other editorial board members, to *reach out* to our readers in various corners of Russia and the world, to listen closely to their preferences as well as to obtain materials for the journal from these far-flung locations. Here the assistance of the journal's representatives could not be more important.

And now, about the issue that you hold in your hands. As the journal's mission calls for, it is diverse and has multiple styles. There is a very practical conversation about manned space flight (an interview with **Alexei Krasnov**), and a question about further NATO expansion (an interview with **Jaap de Hoop Scheffer**)...

But I nevertheless would like to point to three cross-cutting issues that dominate the issue—not without editorial design.

The first is **disarmament**—a term that seemed to disappear from the political lexicon over the course of the last decade. The problems of arms control and disarmament, both bilateral and multilateral, have gradually been pushed into the background.

"The rapid speed of improvements in military technology, the swift adoption of these new technologies by the armed forces of many states and, as a result, the amendment of military doctrines to envision the use of military force to combat new threats and geopolitical

challenges have all taken the global community unawares. As a result of this already fairly protracted period of confusion, the international legal underpinnings of arms control—which took decades to form—has begun to grow antiquated. In many ways it no longer meets current needs," writes PIR Center senior advisor Lieutenant General **Gennady Evstafiev**. Disarmament policy is in crisis, he avers. But it is necessary to return to it given the present circumstances? We must, the author is convinced, and then proceeds to present in detail the new, complex agenda of bilateral and multilateral arms control measures that must be undertaken soon. His palette is purposefully broad: from the reduction of strategic nuclear weapons and speeding up the entry into force of the Comprehensive Nuclear Test Ban Treaty (CTBT), to averting of the development of an arms race in space. But the author cannot but recognize that *returning* disarmament to the global agenda will be very difficult and that there is a very high risk of a new arms race.

I would like to note that the electronic version of this article, which was posted on the PIR Center website even before the printed version was published, led to a flood of commentaries both from Russian and from foreign readers and experts, and the section "Is the CFE Needed"—written as it was by one of the drafters of that agreement—is particularly topical today.

The CTBT's direct predecessors were the "threshold" test ban treaties, negotiated in 1975-76. Ambassador Extraordinary and Plenipotentiary **Roland Timerbaev** was part of the Soviet delegation that negotiated these treaties, which limited the yield of underground nuclear explosions, conducted either for weapons testing or for peaceful purposes. Both the U.S. and Soviet delegations took seriously the need to limit nuclear tests, and undertook the complicated task of developing a detailed, though complex, system for monitoring and inspection which served the cause of disarmament well for many years.

This cause has been taken up by many brilliant individuals, not least of them Academician Lev P. Feoktistov, one of the most important Soviet and Russian nuclear scientists, who later became a supporter of complete nuclear disarmament. **Mikhail Novikov** reviews a new book devoted to his life, that includes both autobiography and recollections of the man by those who knew him. The other book review in this issue looks to the future of nonproliferation and disarmament: in my examination of the monograph *Nuclear Weapons After the Cold War,* I review the new proposals by Russian experts Vladimir Dvorkin and Alexei Arbatov to move policy forward in this area.

The flip-side of disarmament is the question of why nations take up nuclear weapons in the first place. While most typically examined through analyses of the international system and rational state actions, the choice to develop these weapons also has a clear, ethical dimension. This dimension—and the relationship of religious morality to the question of nuclear weapons' development—is examined by Ambassador **Alexei Obukhov,** a man who devoted many years of his life to arms control negotiations, defending *our good* nuclear weapons from *their bad* weapons, who has clearly earned the right to conclude, "defending nuclear weapons is a terrible sin!" On the other hand, states need conventional weapons to defend themselves, particularly in regions with an unpredictable future.

The second cross-cutting topic in this issue is **nuclear energy**. The idea that we are now on the threshold of a global nuclear renaissance has already become commonplace. But how can the expected rapid expansion of nuclear power in certain regions be combined with ensuring international security? How can we learn to build *cooperative nuclear relations*? PIR Center Scheffer Director **Anton Khlopkov** reflects on these questions in his evaluation of what the conclusion of an intergovernmental nuclear agreement with the United States will mean for Russia and its nuclear industry. How realistic it is to expect the entry of such an agreement into force in the foreseeable future, given the current rigidity of the U.S. Congress, is another question.

Further, Nuclear Threat Initiative (NTI) Vice President **Laura Holgate** provides the outlines of the idea for the establishment of an international reserve of nuclear materials, originally proposed by NTI and now under consideration at the IAEA. Whatever the prospects for the practical realization of this proposal prove to be, posing the question of international assurances for

the delivery of nuclear fuel to those states that voluntarily forego the creation of their own nuclear fuel cycle, and thus prove potentially vulnerable to external pressure, is legitimate and long overdue.

A third important topic debated in this issue: **Sino-Russian strategic relations and their prospects**. This is a question that is being asked by all analysts of Russian foreign policy and defense priorities, though sometimes it seems that there are those who *shy away* from making their views known. But I have asked the authors in this issue to depart from diplomatic neutrality. **Vitali Tsygichko,** co-author of our series of duelling viewpoints notes: "I say without reservation: in my view, the openly hegemonic direction that Chinese foreign policy has taken poses a direct threat—or, to be more precise, an entire collection of threats and challenges—to Russian interests in the Asia-Pacific region." But **Dmitri Trenin** is in decisive disagreement with this conclusion: "China is not going to be like the Soviet Union or Japan of the 1930s. Its expansion will not be predominantly territorial in nature, and basically will not be achieved by military means. The Chinese *divisions* will be transnational corporations with their headquarters in Shanghai, Beijing, Shenzhen, and so forth. PRC military aggression against Russia is extremely improbable in the foreseeable future (let us say, 15-20 years)." Who won in this dispute? Whose arguments are more convincing? Visit the PIR Center website and vote, provide your own assessment.

Another argument is conducted on the journal's pages by two of our regular reviewers, **Dmitry Evstafiev** and **Yury Fedorov**. As you remember from the previous issue, we conditionally dubbed the former a "Russian conservative," and the latter a "Russian liberal." I must say that the authors themselves do not agree with these labels—or, if not labels, then at least one might call them simplifications—coined by the editorial staff.

It could be that they are correct. But which one of them is more right (further to the right?) in his appraisal of the course of events in recent months, is nevertheless the key issue. In this issue Dmitry Evstafiev writes that one should pay attention to the imminent shift of technological eras (and warns that Russia is risking that it will sleep through it). Meanwhile, Yury Fedorov, searching for answers to present challenges, cites Bismarck: "The great questions of the day will not be decided by speeches or by majority decisions… but by blood and iron!"

Graeme P. Herd and **Gagik Sargsyan** examine Russia's demographic crisis, and how the uneven population decline may pose threats in the political, economic, societal, and military sphere. It is not too late for Russia to influence current trends, in particular by encouraging immigration, but this would require a far greater policy change than we have seen to date.

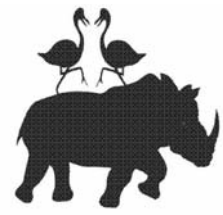
The articles in this issue contain a large number of unsolved problems and accumulated contradictions… however, after several alarming drops in *iSi*, our measurement of the global security index—drops which indicate an increase in global tension—in April and May we did not just see it stabilize, but even a slight rise, making it possible to say that the international situation, although extremely unstable, was nevertheless far from catastrophe. However, the future holds both promise and dangers, and for Russia in particular, a new danger on the horizon is depopulation.

I began by talking about how the journal is developing. I will conclude by talking about this too.

First, subscriptions to *Security Index* for 2008 are now being accepted. Certainly, we are glad that we have been able to provide our journal during its first year of publication under a new name to many of our readers free of charge. But this situation will change in the new year: the journal will once again be distributed via paid subscription. The Russian edition can be subscribed to through the Rospechat catalog, while the international edition can be obtained by becoming a member of the *Centre russe d'études politiques*—the PIR Center's European branch in Geneva—or by joining the *Trialogue Club*. Information on how to do this is provided with the journal.

Second, the wish expressed by many of our readers that we return to a quarterly publication cycle have been heard by the editorial staff. Beginning in 2008, Security Index will come out—in Russian and in English—four times each year!

Vladimir Orlov



Jaap de Hoop Scheffer

"NATO IS NOT LAUNDRY DETERGENT; NATO IS A UNIQUE POLITICAL AND MILITARY ORGANIZATION"

Security Index *editorial board member Konstantin Eggert interviews Jaap de Hoop Scheffer, the NATO Secretary General*[1]

SECURITY INDEX: Only a year ago many people suggested that at the Riga summit NATO would take its relationship with the three Balkan states, Albania, Macedonia, and Croatia, as well as possibly Ukraine and Georgia, much further ahead, probably even offering MAP's to these countries. Now this will not happen. Do you feel a sense of disenchantment?

de HOOP SCHEFFER: No, I do not, because I think that NATO has been consistent in the run-up to the Riga summit. You know that the whole discussion preceding the summit has been debating the transformation of NATO: the legal transformation, the military transformation. You'll certainly see that the nations in the Western Balkans you mentioned will see an encouraging, positive signal of confirmation that NATO's door is open, you'll certainly see in the Riga communiqué that Ukraine and Georgia are mentioned as both nations are having so-called "intensive dialogue." But it has never been the intention of NATO to consider the Riga summit as an enlargement summit. From the beginning it was clear that this was not going to be the case.

SECURITY INDEX: Some observers already claimed that this reluctance to take any kind of demonstrative steps towards Ukraine and Georgia is because some of the leading members of NATO do not want, at the current time, to spoil relations with Moscow, which will be irritated. What would you say to that?

de HOOP SCHEFFER: My answer will be that I don't agree with those observers because I think that NATO enlargement has always been a discussion of performance, discussion of the inspiration of nations wanting to become NATO members, or NATO partners for that matter. And that has always been an autonomous process. That does not mean that there is no discussion of these topics in the NATO-Russian Council, which will celebrate its fifth anniversary this year. We have discussed, for instance—that was before the Russian-Georgian spat, by the way—we have discussed Georgia. Georgia maps out its own future. The Alliance follows that process. Georgia's in intensive dialogue, so is Ukraine. The whole process is performance-based, but I think that those observers are not right if they say that there's direct link. As I said when I was in Moscow speaking to President Putin, speaking to Defense Minister Sergey Ivanov as well, we have a very important partnership with Russia. We should invest in that partnership and that is not, as you know, the 26 plus 1 partnership, NATO and Russia, that is a 27 partnership, which is a basic difference with other partnerships NATO has.

SECURITY INDEX: You mentioned in Riga, speaking at the Riga Conference, that the next NATO summit will take place in about a year and a half, in spring 2008. What are the chances of the three Balkan states as well as Georgia and Ukraine of getting MAP, of moving significantly forward towards membership in 2008?

de HOOP SCHEFFER: My expectation is that NATO will have a summit in the first half of 2008, spring. I do not know is my answer, and that is not because I want to be defensive, I simply do not know. I get this question also from the nations concerned, of course many times. My answer always is: this is a performance-based process. NATO has of course its criteria, its benchmarks, its gauges. And the Intensive Dialogue is one of the phases. I can not possibly say what will happen in 2008, if one or another will be ready for NATO membership, if a one or another will be ready for the MAP. I simply do not know, because if I knew now, I would depart from the basic performance-based principle.

SECURITY INDEX: Many people point out the fact that this kind of massive support of Georgian public opinion for NATO membership influences Georgian chances in a kind of positive way, while the split in Ukrainian public opinion has a kind of negative impact on future chances. Is this so? Is the role of public opinion really so important?

de HOOP SCHEFFER: In the end, the people decide where they want to go. Governments can inspire, governments can provide direction, but in any democracy it's the people who decide in the end. I do know, and you know, that when you look at public opinion in Ukraine for NATO membership, that is still a challenge. And if you ask me a challenge for whom…it is a challenge for Ukraine.

Ukraine is in Intensive Dialogue, we have a distinctive partnership with Ukraine, we'll go on supporting Ukraine whatever and whenever they ask. I will explain NATO in Ukraine, what NATO is, like I do in Russia. I don't sell NATO, NATO is not laundry detergent, NATO is a unique political and military organization.

SECURITY INDEX: You have mentioned the fifth anniversary of the NATO-Russian Council in 2007. And you mentioned in your speech that you wanted to see Russia as a privileged and important partner. However, many people in Moscow, myself included, feel that the relationship is rather.. if not in crisis then in a kind of blind alley. What do you feel about that?

de HOOP SCHEFFER: It's certainly neither in crisis nor in a blind alley. But what I do feel, and as you say, in the next year we'll celebrate five years of the NATO-Russia Council, as well as ten years since the Founding Act—we'll have a double anniversary, in fact. I think, as I said in my speech, this relationship needs investment. If you don't invest in the company, as we know, if you don't go on investing, the results will be less than you expect. What should we do? And if I say "we," I specifically mean NATO and Russia and this relationship we should both invest in. Invest in practical cooperation, our political cooperation, not shy away from the subjects we do not agree upon.

These include Georgia, where there is a spat with the Russian Federation. My message is to both: to Russia, the time has come to abandon the measures against Georgia and the Georgians; to Georgia, it's important that the debate, as far as the tone and the level of the debate is concerned, that the volume be decreased. I see that has been happening over the past weeks.

Coming back to investment in the NATO-Russian relationship, investment from the NATO side, investment from the Russian side… It's a relationship between adults. The Russian Federation is very much adult, the NATO organization is adult. The Russian Federation is a member of the P5, is a permanent member of the UN Security Council. So Russian cooperation in necessary for the resolution of many conflicts in the world: nonproliferation, North Korea, Iran, the Middle East, Kosovo. Both partners have invested in this relationship, and that is the way we should go forward.

SECURITY INDEX: Many people said that NATO would have to have an energy security policy. And Russia is mentioned specifically: its efforts to use energy as a kind of political tool. Aren't you afraid this could become a basis for an anti-Russian policy in NATO?

de HOOP SCHEFFER: Definitely not. Not because when I mention energy security policy in relationship to NATO the line I always follow is that NATO should define the terms. And you will not hear me mentioning energy security in direct relationship to Russia or Russian policy. I mean, NATO is not the European Union, NATO is not an energy agency, NATO is NATO, a political-military organization, which in its strategic concept has a reference to a free flow of energy. And if you see a reference to energy security in the Riga Communiqué, it has nothing to do with the NATO-Russian partnership, it has everything to do with finding NATO's added value.

And if I speak about added value, let me repeat in front of your microphone the example I have given. I could imagine NATO and partners like Russia participating ... in the Mediterranean exercises with NATO warships. NATO and its partners could look into protection of sea lanes along which natural gas or oil is transported. It's about NATO's added value and I would certainly not qualify any reference in the NATO Communiqué to energy security as being a threat to Russia, not at all.

SECURITY INDEX: In relation to the Russian-Belarusian energy crisis in the beginning 0f 2007, what specifically could NATO do to address the issue of energy security?

de HOOP SCHEFFER: The gaz dispute and crisis between Russia and Belarus was, and remains, a bilateral matter. Thankfully, it was resolved rapidly through negotiations conducted between Moscow and Minsk.

However, the dispute reminded all of us, producing, consuming and transit countries alike, of our dependency upon uninterrupted and reliable flows of energy. At the Riga Summit in November last year, NATO articulated its support for a coordinated international approach to determining the most important risks to energy infrastructures and to promoting their security. This decision at Riga was fully consistent with NATO's Strategic Concept in which the Allies recognise that the increasingly global dimensions of security and stability necessitated the monitoring and assessment of, *inter alia*, the disruption of the flow of vital resources.

What NATO has agreed to do, as a first step, is to engage in consultation among the Allies on energy security issues and establish where NATO could best add value to safeguard the security interests of the Allies and, upon request, to assist national and international efforts. We have consulted with Russia as well as on how best to ensure the security of critical energy infrastructure. These consultations will enable us to identify possible specific measures that could be taken in this important area.

SECURITY INDEX: Discussion about the NATO operation in Afghanistan took up a lot of time at the Riga Summit. Not all countries want to contribute enough troops and send them in the line of fire. Does it mean that tensions in the Alliance jeopardize the outcome of the Afghan operation? Wasn't it too soon that NATO went "out of area"?

de HOOP SCHEFFER: NATO has 33 000 troops in the UN-mandated International Security Assistance Force (ISAF) in Afghanistan. These troops come from 37 nations (all 26 Allies and 11 non-NATO nations) and are deployed throughout the country and with the full support of a vast percentage of the population there. Allies are committed to provide *in extremis* support to each other, should the need arise. Our engagement there reflects the common recognition by NATO member nations and our ISAF partners that our security is intimately bound to the emergence of a sovereign, democratic and prosperous Afghanistan at peace. NATO is working for a comprehensive solution to challenges facing Afghanistan, including the need for reconstruction, development and strengthening democratic institutions. To this end, NATO cooperates closely with the Afghan government, as well as the UN, the EU, the World Bank and other key donors.

As for the question about going "out of area", I believe it is essential to understand that for all of us, geography and distance are no longer factors in enhancing our security, and that is why NATO had to go "out of area": quite simply, if we do not deal with the problems when and where they arise, those problems will end up on our own doorstep and be even more difficult to deal with.

SECURITY INDEX: In recent years there is an ongoing discussion about NATO playing a more active role in the Middle East - apart from the Mediterranean Dialogue, what could this role be?

de HOOP SCHEFFER: NATO has indeed an active dialogue and cooperation program with the countries from North Africa and the broader Middle East. Both Mediterranean Dialogue and the Istanbul Cooperation Initiative are important and useful tools to promote trust, confidence and mutual understanding as well as to engage in concrete cooperation on issues of common interest such as the fight against terrorism. Our Summit in Riga has clearly confirmed NATO's readiness to develop its ties with partners, including countries from this strategic region of the Middle East.

SECURITY INDEX: In 2002, targets were set for European alliance members to try and decrease the technological gap with the US. It seems not much progress has been made so far. Why? Is this technological divide now completely unbridgeable?

de HOOP SCHEFFER: I assume that the targets to which you refer are those activities set in train by Heads of State and Government at the Prague Summit in 2002, and which are known collectively as the Prague Capabilities Commitment (PCC). This package of measures was designed to improve Alliance defence capabilities in a number of key operational capability areas: creation of a rapid response force; Chemical, Biological Radiological and Nuclear defence; information superiority; combat effectiveness; and sustainability and deployability. Important progress has been made in all the identified areas and this was reflected in the announcements made at our last Summit in Riga, where the NATO Response Force, was declared fully operational.

SECURITY INDEX: What about NATO's policy in Central Asia? A Special Representative for the region has been appointed. What does he do, and does this tie up with the energy security issue?

de HOOP SCHEFFER: Central Asia is a strategically important region for the Alliance. NATO is interested in a stable and prosperous Central Asia, and ready to support the democratization process in the countries of the region, which is a key pre-requisite for ensuring long-term stability and prosperity. Central Asia is also extremely important for NATO in the context of NATO's contribution to the stabilization and reconstruction in Afghanistan. All five Central Asian Partner governments provide valuable support for the NATO-led ISAF operation and there is potential for further developing co-operation with the countries of the region in this respect.

Since the appointment of a Special Representative for Central Asia and the Caucasus following the 2004 Istanbul Summit, he has been working actively to enhance co-operation between the Alliance and all five Central Asian countries. NATO has established high-level working contacts with the leaders of the region and as a result, most of these countries have significantly intensified their co-operation with the Alliance. There is now even a positive development in the NATO-Uzbekistan dialogue which was suspended after the Andijan tragedy.

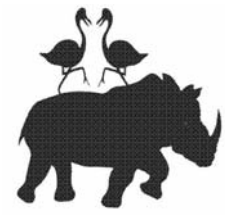
We are interested in further deepening our political dialogue with the Central Asian governments on regional security issues, including on the Caspian basin. We are also increasing our practical co-operation in areas such as civil emergency planning and disaster relief, crisis management, naval issues, and intelligence exchange. This practical cooperation will also contribute to the efforts of the international community to address the issue of energy security, in particular the protection of energy infrastructure, which is of great concern for Allies and Partners alike.

SECURITY INDEX: You have mentioned that in the year 2009, for the 60th anniversary of the NATO Alliance, you envisage a possibility of adopting a new NATO strategy for the coming century. Does it mean that the Washington Treaty of 1949 has to some extent become obsolete? How do you see the main points of this grand strategy today?

de HOOP SCHEFFER: The Washington Treaty is as alive as it has ever been since 1949. I'd also say that the Washington Treaty's Article 5 is the core of NATO, that's NATO's core business. What I say is not referring to the century, because that would be a bit much, I think. If I see NATO transforming, developing, the moment may have come to think about a new guiding document. Not the Washington Treaty, not Article 5, to avoid any misunderstanding. That would stay as it is. A guiding document, call it a strategic concept, call it anything you'd like to call it, for NATO's future. It's finally the alliance who decides if they want it or not. But it is certainly not the case that the basics of NATO will change. Let's not forget, finally, that at the Riga Summit NATO will adopt a document we call the Comprehensive Political Guides, that's NATO jargon for [a written document outlining] what we have seen as NATO developments over the past years, what we would like to see as NATO developments in the future. There's a whole transformation process. I think that at a certain stage, and I link it to the 60th anniversary of NATO in 2009, it might be a good idea to think about a new basic document, but certainly not about a new Washington Treaty, or Article 5. That's NATO's core business.

Notes

[1] Konstantin Eggert's conversation with Jaap de Hoop Scheffer took place on February 1, 2007.



Alexei Krasnov

MANNED SPACE FLIGHT HAS ALWAYS BEEN AN ARENA OF POLITICAL RIVALRY

Security Index *editor-in-chief Vladimir Orlov spoke with Alexei Krasnov, head of the Russian Space Agency's Manned Programs Directorate.*[1]

SECURITY INDEX: Alexei Borisovich, what are the government's main tasks in the area of space research at present, particularly those for which your directorate has responsibility—manned flight? Is international cooperation in this "sensitive" sphere progressing smoothly?

KRASNOV: Manned space flight has always been an arena of political competition, competing ambitions, and competition in the sphere of science and technology. It is not surprising that in the early stages of man's opening up of space, the United States and the Soviet Union were carried away by the competition in man's exploration of near-earth space.

In the near term (by 2015), the most important goal in space exploration will be the completion of the program to create, maintain, and use the International Space Station (ISS). The international partners in this program, as is well known, are the United States, Russia, European Space Agency partner states, Japan, and Canada. Solving the tasks that have been set requires all of the partners actively to fulfill their international commitments.

At the beginning of the process of creating the ISS, we, the Russians, were very optimistic, believing that we could build the station in five years. But certain unforeseeable problems arose that got in the way: on our side, there were delays in the construction of the first station components; later, the space programs of our U.S. colleagues stopped for three years due to the *Columbia* shuttle catastrophe.

Now we are switching to yet another modification of the station—already more than the twelfth—for which components are supposed to be finished in 2010. During this period our vision of what this station should look like has had to change. We realized that the composition of the Russian segment should be different. We reduced our "appetite" where the size of our segment was concerned and developed a program for the modernization of the module, in order to obtain the maximum amount of useful capacity for scientific programs.

At present, our ISS partners' plans are to operate the station through 2016. Originally, we assumed that the station would operate for 15 years, and 2016 really "marks" the end of 15 years of the existence of the service module that is the foundation of the orbital structure. In many respects the current assembly stage depends upon our colleagues, on shuttle flights. It is very possible that we will soon begin discussions on extending the service life of the station until 2020, at the very least.

As for technological exchange, I would like to say that the picture of cooperation on the ISS is not without problems at present. The worsening international situation of recent years and the threat of terrorism provoked the stiffening of U.S. legislation and many issues in the sphere of manned space flight are now considered to be military issues. This includes the space shuttle system—the system by which people are transported into orbit.

I would like to emphasize that any serious cooperation in space is unavoidably tied to the question of the observance of the regime controlling the transfer, proliferation, and use of technologies that can be used for the production of delivery vehicles for weapons of mass destruction (WMD). The nature of outer space exploration is dual-use, since research results can be used both in the military and in the civilian spheres.

International space cooperation will undoubtedly be developed, but only with the understanding that the means to deliver crews into orbit can also be used to deliver weapons into space. Communications satellites are of course a key component of C-3 systems (Command, Control, and Communications), without which it is impossible to imagine a modern theater of war. The GPS system and Russia's GLONASS system are first and foremost elements of national defense systems. The same can also be said of high-resolution meteorological surveys of the earth's surface. Therefore, international cooperation will be developed, but questions of the protection of sensitive information related to WMD delivery systems will always be on the agenda.

SECURITY INDEX: At the present time, what is Russia's role in the construction of the ISS?

KRASNOV: Russia's role in the implementation of the program is steadily growing. Russian *Soyuz* spacecraft may become the only remaining means to transfer crews to and from the ISS. This is due to the fact that the U.S. National Aeronautics and Space Administration (NASA) must ensure the inclusion of European and Japanese research modules in the composition of the ISS by 2010, as well as an increase in the number of permanent ISS crew from three to six people. After this, NASA plans to end shuttle operations. But a new American manned spaceship will not be created earlier than 2013-14.

Under this approach, *Progress* cargo ships—which deliver cargo to the station—will also take on an increased load. At present, negotiations are under way between the Russian Space Agency (Roskosmos) and NASA on the United States' possible acquisition of Russian services for the delivery of crews and cargo for the ISS program.

Russian responsibility is also growing due to the U.S. President George Bush initiative,[2] which will influence the fulfillment of existing agreements. This is, primarily, true in a purely material sense, since the initiative will require significant expenditures. These resources were in part found through the reduction of ongoing programs. Naturally, the ISS program was also affected, but the greatest influence over the execution of the program, I emphasize again, was made by the decision to terminate shuttle flights in 2010. We hope that over the long term, despite the exclusively national nature of the initiative, it will allow us to use the fairly in-depth experience of international cooperation within the framework of the ISS program.

SECURITY INDEX: How are the United States' partners in the project reacting to the developing situation? And how is Russian cooperation with project partners other than the United States?

KRASNOV: The European Space Agency (ESA) is concerned by the developing situation and has voiced serious interest in cooperating with Russia on the operation and targeted use of the ISS. For example, under the ISS program joint Russian-European designs have already been used to equip the *Zvezda* Russian service module with the European DMS-R data management system as well as integrate the Russian ISS segment with the European Automated Transfer Vehicle (ATV) cargo carrier and the European Robotic Arm (ERA).

In addition, intensive Russian-European consultations are currently under way on the possibility of the joint creation of a next-generation transport system to ensure the transport of crews and cargo to the ISS. It has been proposed that over the long term this system should ensure the implementation of programs for research and exploration of the moon, and later, possibly, Mars. The first stage in the creation of such a system could be the comprehensive modernization of the *Soyuz* and *Progress* spacecraft in order to undertake the tasks that have already been set. Europe is also interested in the possibility of operating the new system from the European launch site in Kourou (in French Guiana, South America).

The joint development of a next-generation transport system and its subsequent operation is a very complex matter for both parties, since it requires the thorough harmonization of technical, organizational, legislative, and other matters, as well as resolving the issue of the allocation of significant funding. At the same time, both parties must be clear on the tasks this system will

undertake, what requirements it must satisfy, and so forth. For this reason, a decision on joint development will not be made earlier than 2008.

Several joint Russian-European experiments are being conducted on the Russian segment of the ISS. Under an agreement with Roskosmos, during a visit to the Russian segment of the ISS by ESA astronauts, six European research programs, including over 100 experiments as well as the long-term flight of European astronaut Thomas Reiter as an expedition member counted under the Russian quota for ISS crew, were conducted.

At present, Roskosmos and ESA are working out joint programs in biomedical and physics research on the ISS as part of the ISS-15 though ISS-18 expeditions. The areas of research of greatest mutual interest have already been determined.

In addition to cooperation with ESA, Roskosmos and a number of Russian enterprises are cooperating directly with the European national space agencies and large private European corporations. As an example, one can point to the draft Russian-French research program and possible programs on space exploration, drawn up by Roskosmos and France's National Center for Space Studies (CNES).

The Russian segment of the ISS has also undertaken a number of experiments for the Japanese Aerospace Exploration Agency, as well as for a number of private Japanese companies. This primarily involved research connected with the cultivation of protein crystals, and taking videos with the aid of high definition television cameras.

SECURITY INDEX: We are basically talking about flights in near-earth space. But how about flights to other planets or, at least, to our nearest "neighbor," the moon?

KRASNOV: Interest in the study of the solar system and deep space, and in the prospect of manned missions to the moon and Mars in particular, heated up to a considerable degree after the statement by Bush at NASA headquarters on January 14, 2004, when he made public the new U.S. concept for the exploration of outer space. The plan, in particular, calls for manned lunar missions by 2020. The moon will be used as a base for manned flights to Mars, which are planned for some time after 2030. In the past three years, NASA has generally determined the architecture of space infrastructure for a lunar mission and the design of the Crew Exploration Vehicle (CEV), and begun its development.

The global community of space researchers is interested in these new plans. NASA has proposed to all interested parties that they determine their capabilities to participate in the implementation of this program. Moreover, here we are talking exclusively about a partnership, not about fulfilling U.S. contracts. One should take into consideration that NASA's budget exceeds the combined budget of other participants in space activities by several times; therefore, its international partners are justified in expressing fears that their potential partnership with NASA can not be on an equal basis. In fact, the United States has confirmed this, by openly stating its new space doctrine in 2006, already mentioned above, where it unequivocally declares the priorities of U.S. national interests in any space projects, as well as the U.S. intention to limit the access of "undesirable participants" to the space programs. For these reasons, its international partners are not yet hurrying to join the American initiatives.

SECURITY INDEX: So are Russia and other countries currently remaining on the sidelines in this sphere?

KRASNOV: Russia is proceeding from the fact that manned lunar missions and the creation of an inhabited lunar base could ensure the rise of the domestic rocket industry to the global technological level. Such flights will give Russia the chance to claim a leading position in international space cooperation, including in the area of ultradistant radar detection of asteroids and comets, in conducting unique astronomical and astrophysical observations outside the atmosphere, and in developing and using advanced technologies, including the full-scale development of promising space technologies.

Russian research on the planets (primarily the moon, Mars, and Venus) and small bodies of the solar system with the aid of unmanned spacecraft has been conducted since the 1960s. Important results have been obtained and unique experience and scientific and technical

knowledge accumulated in the creation of critical elements and systems for the research and exploration of the planets in the solar system. In the area of Russian manned space research, the priority is the creation of lasting manned orbital complexes and providing for prolonged (up to one-and-a-half year) human life and work during space flight. The accumulated capabilities are also of interest to our international partners.

Thus, the Europeans have expressed interest in cooperation with Russia under the European *Aurora* program aimed at exploring the solar system. Russia and Europe are in agreement that, first of all, ISS construction must be completed in the agreed-upon configuration to ensure the complete fulfilment of plans for research and experiments to get answers to many questions related to the further development of manned space flight, to work out particular technical solutions, and to confirm and demonstrate their operability. Furthermore, manned missions to the moon and Mars must be preceded by a fairly long period of research of these planets by unmanned systems from orbit and on the surface, in order to finalize (including in near earth orbit) the basic technical solutions and structural elements of space systems, as well as in order to select the optimum sites to land crews both from the point of view of safety and scientific worth. Russian and European experts are actively cooperating in the preparation of these robotic missions, which will precede the manned expeditions.

The idea of developing a joint Russian-European program to prepare for and realize manned research of the moon and Mars would also make sense. This will require the formulation of goals and tasks for each stage that are tied to real timelines and funding capabilities.

China has also shown significant interest in cooperation with Russia in the field of lunar research. At present, Russian and Chinese experts are analyzing the possibilities for a joint manned lunar mission.

As for a Martian program, its realization requires such enormous technological, economic, and intellectual resources, that not one country can carry it out on its own. Basically, the joint capabilities of the United States, Russia, Europe, Japan, and China make it possible to consider a manned expedition to Mars in first half of the 21st century realistic, if the efforts of various states are joined together and they fulfil the obligations they have undertaken.

Russian experts estimate that full-scale study and exploration of the moon can begin no earlier than 2020-25. Furthermore, many questions related to the reasons for putting men on the moon and other space objects, as well as their goals and tasks, remain open. We are ready for the closest cooperation with international partners to resolve these and other problems on a mutually beneficial basis.

SECURITY INDEX: As you have already said, space research is an arena of interstate competition. Nevertheless, recently some private companies have made their own launch attempts. How you do react to this course of events?

KRASNOV: I think that there are undoubtedly prospects for private space research. Space and space technologies are very complex technologies, and many, as a rule, begin with failures, but this should not be discouraging. Those companies that have already operated in this area for several years have the best initial potential. Suborbit (the arena of near-earth flight) represents real interest to business. By the way, almost no one knows it, but Russia is also working on this albeit, unfortunately, with the participation of foreign, not Russian, private capital. However, we should always keep in mind that this sphere is doomed to remain the subject of very close attention on the part of the relevant state agencies that are called upon to maintain controls over such sensitive things.

Notes

[1] This interview is based on an address by Alexei Krasnov, head of the Russian Federal Space Agency's Manned Programs Directorate, at a meeting of the Trialogue club held by the PIR Center on April 10, 2007.

[2] This refers to the National Space Policy, a conceptual document on U.S. space policy signed by George Bush in 2006. The document, in particular, envisions that in future Washington will not sign agreements that may limit its plans in space, and that it will attempt to limit the access of "hostile" forces to space.

Gennady Evstafiev

DISARMAMENT RETURNS

In the past decade we have all witnessed, and some have directly participated, in increasing the *quality* and *quantity* of weapons throughout the world. Suffice it to say that by 2006 global military expenditures had reached the incredible sum of $1.1 trillion.[1]

The U.S. defense budget makes up fully half of this amount: this is evidently the source of the offensive nature of U.S. military and political strategists' conceptual views, as well as the reason for their aggressive implementation. *It is the* Americans who set the tone and force everyone else, both allies and partners as well as opponents, to emulate them to the extent their financial, scientific, and technical capabilities allow, in order to ensure that the already doubtful balance of power is not completely destroyed. This is a great disservice that our American partners are doing to the rest of humanity. Yet it has become unfashionable to talk about and consider restraining the growth in defense budgets. Thus, for the foreseeable future the trend of continuing increases will remain.

THE CRISIS FACING DISARMAMENT POLICY

The rapid speed of improvements in military technology, the swift adoption of new technologies by the armed forces of many states and, as a result, the amendment of military doctrines to envision the use of military force to combat new threats and geopolitical challenges have all taken the global community unawares. As a result of this already fairly protracted period of confusion, the international legal underpinnings of arms control—which took decades to form—has begun to grow antiquated. In many ways **it no longer meets current needs**.

In recent years, the implicit balance that long existed between efforts in the area of classical disarmament on the one hand and in the sphere of combating the proliferation of weapons of mass destruction (WMD) on the other has been destroyed. However, here we in no way intend to set these two concepts against each other. Taken together, they constitute the essence and content of the global disarmament process. This is made quite clear by an enumeration of the well-known *13 practical steps* towards the realization of Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), adopted by the participants of the NPT Review Conference in New York in 2000.[2] As is well known, this document includes the early entry into force of the Comprehensive Test Ban Treaty (CTBT), the negotiation of a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices (Fissile Material Cut-Off Treaty, or FMCT), the early entry into force and full implementation of START-2 and conclusion of START-3 as soon as possible while preserving and strengthening the Anti-Ballistic Missile (ABM) Treaty as a cornerstone of strategic stability and as a basis for further reductions of strategic offensive weapons, and the application of the principle of irreversibility to nuclear disarmament measures, along with many other provisions.

One can note with satisfaction that on December 25, 2006 the Russian president signed the federal law *On the Ratification of the Agreement between the Government of the Russian Federation and the CTBTO Preparatory Commission on Measures Regarding International Monitoring System Facilities, envisaged by the Comprehensive Nuclear Test-Ban Treaty*.[3]The world has waited for the United States to take steps to ratify the CTBT for a long time, which would help to remove any serious doubts about the ultimate intentions of the United States.

However, subsequent events have shown that there is **generally little justification to hope for serious progress in the area of nuclear disarmament.** At least until the middle of the 21st century nuclear weapons will confidently occupy an *exclusive* spot in the arsenals of the recognized nuclear weapon states and strengthen their positions in the militaries of unofficial nuclear powers (India, Pakistan, and Israel). The capabilities of these latter states, which are not limited by any agreements, may soon become comparable to the nuclear arsenals of such powers as France, the United Kingdom, and China (Chinese nuclear capabilities are now estimated to total about 200 warheads; in 2004, they were estimated to be as high as 402).[4]

Certainly, not everything looks so bleak. In the past 10-12 years the number of nuclear warheads in the U.S. and Russian arsenals, as a result of various treaties, has been more than halved. But the rest of the world is *justified* in considering this to be too little. On September 30, 2005 the United States and Russia announced the completion of downblending 250 tons of HEU, enough for about 10,000 nuclear warheads, under the 1993 HEU-LEU Agreement.[5] At the turn of the 21St century the illusion arose that we were on the eve of a breakthrough. On November 13, 2000 the recently elected Russian president, Vladimir Putin, announced, "We see no grounds that would prevent further deep reductions in strategic offensive weapons. As is well known, we have proposed to the U.S., including at the highest levels, that the attainment of radically reduced levels of our countries' nuclear arsenals—down to 1,500 warheads for each country—should be set as a goal, which can quite feasibly be reached by the year 2008. But neither is this the limit: we are prepared in future to consider even lower levels."[6] Even General Goodpaster, who was president of the influential Atlantic Council of the United States in the late 1990s and a well-known *hawk* in his day, promoted the idea of START-3, START-4, and START-5 with a final result of a total level of 1,000 nuclear warheads for each of the official nuclear weapon states.[7]

But this did not happen. Radical Republican conservatives came to power in the United States who were convinced that the *American century* was coming, a century of protracted, undisputed U.S. military and political supremacy. They viewed well-known promoters of *détente* like Henry Kissinger as *defeatists*. Moreover, according to renowned American political scientist Rose Gottemoeller, President George W. Bush "has used two principles to dramatically change the United States' conduct of its arms control policy: first, emphasize unilateral action [...]; and second, be willing to discard arms control mechanisms that might be considered outdated or harmful to U.S. interests."[8]

The consequences of Washington's choice continue to be felt to this day. The ABM Treaty was quickly lost, and START-2 too disappeared for political reasons. START-3 was replaced by the Strategic Offensive Reductions Treaty (SORT), which differs significantly from previous treaties between the two countries. The traumatic reaction to the dramatic and unexpected events of September 11, 2001 marked the time to move towards the use of force, including unilaterally, to destroy terrorists throughout the world. One of the primary tasks became denying terrorists access to WMD. In 2003, Washington's Iraq catastrophe began; it continues to this day. The *global war on terror* has become the Republican administration's main political trump card, and has led to the revision of nuclear doctrinal concepts and the possible use of nuclear weapons. The world has witnessed the advent of the U.S. concept of a "new triad." Classical disarmament has been pushed firmly into the background.

We see excessive enthusiasm for the issue of WMD nonproliferation not only in the transfer of the center of gravity of diplomatic and negotiating work from *disarmament* to *nonproliferation*, but also in the transfer of personnel: negotiators and experts in key state participants in the negotiating process, like the United States and Russia, have been transferred from organizations involved in negotiating strategic and conventional weapons issues (organizations now in fairly rapid decline) to quite amorphous and very politicized organizations dealing with nonpro-

liferation issues. And some political scientists have introduced the traditional, unhurried process of *bilateral* negotiations into the analysis of multilateral nonproliferation issues. Thus, the number of individuals who are thoroughly versed in disarmament issues and know how to conduct negotiations competently has been greatly weakened on both sides of the ocean. Moreover, in 2005 the seventh NPT Review Conference in New York suffered a phenomenal failure, when agreement could not even be achieved on an *abbreviated* final communiqué. This can, in part, be blamed on the stagnation of the classical nuclear disarmament process.

It is clear that none of the important areas of arms control mentioned above should be held hostage to another. In both spheres significant problems that threaten security and stability, and could give rise to regional and even global crises, have been accumulated in equal degrees; as a rule, these problems affect Russia's direct interests. There is an indissoluble connection between these two spheres. For instance, the eminent expert Nikolai Sokov believes that the ineffectiveness of the current nonproliferation regime and, as it is now fashionable to assert, international organizations' incapacity to stop the spread of illegal WMD programs, could lead to a new role for nuclear weapons as an important element of so-called "counterproliferation."[9] The North Korean nuclear tests in early October 2006 will undoubtedly be cited to support this approach.

Russia has inherited the traditions in the area of the fight for disarmament. The decrease in its activities in this area has ended. There is every reason to expect that Russia will present proposals aimed, if not at stopping, then at least at slowing the most dangerous aspirations of those who believe that there are neither commonsensical nor other limits to their ambitions.

One of the basic tenets of Russian military doctrine is that Russia must have sufficient nuclear capabilities to cause "predetermined damage" to any aggressor "in any situation."[10] In other words, Russian nuclear forces must be able to survive a massive unexpected attack and respond by inflicting on the aggressor the aforementioned "predetermined damage." Essentially, the concept of nuclear deterrence, which has proven itself over the course of many years, is based on this approach.

Today one often hears, albeit unofficially, the more militant Republicans in Washington say that given their current military superiority, including in the area of nuclear weapons, the United States can beat any enemy in a nuclear conflict. This attitude was expressed in a sensational article in the journal *Foreign Affairs* written by two little-known experts.[11] The article can essentially be seen as a provocative probing of world reaction to ideas that are being examined in the Pentagon. Donald Rumsfeld recently left, without having achieved a final victory in Iraq. Immediately thereafter, a Defense Science Board report appeared that was quickly "leaked" to the press. It poses the question of whether further negotiations on strategic nuclear force reductions should be rejected and whether the U.S. deterrence capability should be retained and strengthened since "Russia's future as a democratic state remains uncertain."[12] This could, if it actually becomes administration policy, seriously complicate any further steps towards nuclear disarmament. In any case, the vagueness of Washington's position on negotiations to replace START-1 with a new agreement is not coincidental, to say the least. The *Foreign Affairs* article apparently originated in the same circles and was in part aimed at cheering up the Pentagon and distracting it from its agony in Iraq and Afghanistan.

CHALLENGES FACING RUSSIA

The Russian leadership noted the appearance of the U.S. concept of a "new triad." In a report to a meeting of the Russian armed forces leadership on October 2, 2003, Minister of Defense Sergei Ivanov focused attention on the possibility that U.S. nuclear weapons may once again become real military tools, if certain technological advances are applied to them. Here we are talking about a transformation from a deterrent force into battlefield weapons. In practice, this means lowering the threshold for the use of nuclear weapons, which is indeed implied by the "new triad" concept. Naturally, this means that the general staffs of various states will have to restructure military command and control and the principles upon which the use of their armed forces are based.[13]

For its part, the Russian leadership has now adopted the "principle of preemption" against international terrorists, thereby increasing its flexibility of action and ability to oppose dangerous trends in a timely manner. However, this does not imply the use of nuclear weapons.[14]

Of course, for the foreseeable future, in the absence of a direct military threat, Russia must not burden itself with catastrophic ideas about maintaining nuclear parity not only with the official nuclear states as a group, but even with the United States alone. We do not have the right to repeat the mistakes that cost the Soviet Union so dearly. But maintaining a persuasive nuclear deterrent as a key element of ensuring strategic stability is a duty of the nation's leadership to its people, a fact that was expressed clearly in the 2000 "Fundamentals of Military Doctrine," where it said: "The Russian Federation maintains the right to use nuclear weapons in response to the use against it and/or its allies of nuclear or other types of weapons of mass destruction, as well as in response to large-scale aggression using conventional weapons where Russian national security is threatened."[15] Thus, the right to a nuclear first strike is maintained under certain circumstances. This requires not just a reconsideration of our approaches to nuclear force structure, but also the allocation of the necessary financial and material resources in full measure, in order to ensure the survivability and controllability of our reduced nuclear capabilities at the highest level of reliability, taking into account the continual improvements in both nuclear and non-nuclear offensive weapons in modern warfare.

To date our strategic nuclear forces have not attained the necessary level. If we consistently work towards this goal, then provocative thoughts about the possibility of conquering us in a nuclear conflict will not arise. Russia should on no account be drawn into another nuclear arms race, something on which our American partners are evidently secretly relying.

To indicate the seriousness of our intention to protect our national security and territorial integrity, we believe that the Russian leadership must adopt a sort of "pre-nuclear deterrence system" as a political signal. This system would also be based on long-range high precision weapons, which would be used to destroy "high value targets" on the territory of a potential aggressor in order to demonstrate a willingness to respond to threats through escalation if necessary. This would provide significant flexibility and a plan for initial actions. In the overwhelming majority of situations the very existence of this "pre-nuclear" deterrence system will serve as the key deterring factor. In this the author shares many of the views of the well-known Russian strategic weapons expert Alexander Saveliev.[16] Attaining this sort of capability does not require the construction of new forces.

THE U.S. "NEW TRIAD" DOCTRINE AND ITS IMPLICATIONS FOR DISARMAMENT

The 2002 Nuclear Posture Review outlined the key trends in the development of U.S. nuclear force structure in the coming five to ten years. They are in part the result of the new U.S.-Russian relations in the strategic sphere, where both sides have reached an understanding that they no longer see each other as enemies and are ready to work together to combat new challenges and risks, particularly in the area of international terrorism. The most important idea embraced in the "new triad," if we do not separate it from the well-known old term strategic triad, is somewhat disorienting. According to the new document, it consists of:

- ❑ offensive strike systems (both nuclear and non-nuclear);
- ❑ defense (both active and passive);
- ❑ revamped defense infrastructure, which will ensure a timely reaction to threats that arise.

This "new triad" is tied together by the *C2* command and control system and corresponding reconnaissance capabilities.[17]

The idea has yet to obtain its final form, and attempts to sell it to the U.S. Congress to date have met with only mixed success, due to the likely high costs of implementation as well as probable political costs. But one should keep in mind that although the strategic nuclear elements of the old triad would only become one part of the "new triad," ICBMs, SLBMs, and nuclear-

armed strategic bombers would continue to play a decisive role in nuclear policy. It is clearly stated that Russia's nuclear capabilities remain an issue of concern. If U.S.-Russian relations deteriorate seriously in future, the United States may need to reexamine the levels of its nuclear forces and related planning.[18] Thus, agreed levels could also be revised. Indeed, the structure of the old strategic nuclear forces has remained the same; moreover, Washington does not plan to go lower than the level of 2,200 nuclear warheads (in addition to about 1,500 in reserve).[19] Furthermore, work on the development of a new ICBM to replace the *Minuteman III* has already begun; it is scheduled to enter service in 2018.[20] This sort of plan cannot be explained by any strategic goals other than an intention to preserve a powerful nuclear deterrent aimed against Russia. The recent decline in U.S.-Russian relations clearly strengthens this idea, and even the possible accession of a Democrat to the presidency is not likely to change this constant component of U.S. policy.

New nuclear systems under consideration include high-precision nuclear warheads with a yield of about 10 tons (so-called "micro-nukes") for the destruction of hardened, buried targets; 1,000-ton yield nuclear warheads for battlefield use (so-called "mini-nukes"); nuclear warheads for the anti-missile defense system with yields of about 100 tons (also "mini-nukes"); as well as several other new types of nuclear weapons.[21] The intention is to reequip the *Minuteman III* with *W-87* warheads and retain the *W-88* warheads on the *Trident 2* SSBN, which is exclusively designed for rapid destruction of hardened targets: ICBM launch silos, sites where mobile ICBM launchers are based, and underground military command centers. It is no secret that these are the components of the nuclear infrastructure of just one country: Russia. The well-known opponents of these plans, Democratic Senators Edward Kennedy and Dianne Feinstein, expressed themselves very clearly in this regard. The former noted that current policies "jeopardize the entire architecture of nuclear arms controls so carefully negotiated by our leaders over our lifetimes," while Senator Feinstein said that "This administration seems to be moving toward a military posture in which nuclear weapons are considered just like other weapons ... a usable instrument of military power..."[22] One can only hope that now that the U.S. Congress is once again controlled by Democrats, these esteemed senators will maintain their policy views, which may open up possibilities for cooperating with them and, at the very least, the U.S. rejection of the more offensive notions. Russia appears to have a good chance to propose another vision of the nuclear future.

During his meeting with Defense Minister Ivanov in Alaska in August 2006, his then-U.S. counterpart Donald Rumsfeld announced, "The United States is looking into the possibility of taking a relatively small number of our ballistic missiles and taking a nuclear weapon off and putting a conventional weapon on a ballistic missile. We would be happy to see the Russian government decide to do the same thing."[23] The U.S. Air Force believes that several dozen ICBMs could be refitted with nonnuclear warheads over the course of two years for a relatively small sum.[24] It is becoming clear that under the pretext of the dire need to combat international terrorism, they are proposing the introduction of various high-precision nonnuclear strike forces, in some cases circumventing START-1 provisions. As evidence, note the reequipping of several SSBNs as "special purpose" boats.[25] The United States already has projects like the *Minotaur II* and *Minotaur III*, where an increase in the power of nonnuclear missiles and SLBMs is planned through the use of higher energy explosives and other technologies. It would appear that the idea here is to increase counter-force options.

Donald Rumsfeld's proposal to reequip a portion of ICBMs and SLBMs with nonnuclear warheads is apparently seen in Washington as a way to remove them from the limits of existing international agreements. Understanding the vacillations in their argumentation is difficult. Although the absence of the necessary level of transparency makes it impossible to determine what warhead is on a missile, the idea of discussing the relatively nonconfrontational problem of "the false identification of a non-nuclear strike" has been neglected. U.S. specialists hold forth as though this question has already been solved, even proposing separate launch sites for ICBMs with non-nuclear warheads, in particular at bases in California and Florida. Apparently U.S. strategy views this ambivalence as advantageous, and they need at least Russia's tacit agreement to this reorganization of the strategic forces.

Now we are stuck with this problem and the question is no longer so much about "identification" as about ensuring the strategic stability both sides traditionally like solemnly to declare. The latter is feasible, thanks to an increase in the predictability of the actions of both parties and the regular removal of goads for a first strike. However, we have still not dealt with the problem. Probably we should make use of it to reactivate talks with the United States about the future of strategic arms, something our partners are persistently avoiding.

COULD HIGH-PRECISION WEAPONS REPLACE NUCLEAR WEAPONS?

The eminent Russian scientist and designer, general director of the State Scientific Center for Aviation Systems and member of the Russian Academy of Sciences Yevgeny Fedosov has written, "The main landmarks of the 21st century—a globalized economy, a post-industrial informational society, and increased terrorism—are not completely compatible with nuclear weapons."[26] The military conflicts that we have seen in the past decade testify to the *birth of a new type of war*.

The concept of a "front" has been erased; it was basically absent in the Balkans, Afghanistan, and Iraq. Instead the concept of "non-contact military actions" emerged. Precision weapons were used as the main weaponry (as a rule, cruise missiles with a broad range of operation), as well as guided smart bombs and new methods of reconnaissance, targeting, and delivery like unmanned aerial vehicles (UAVs). Ground forces were only used after the crushing defeat of the enemy for holding territory, mopping up operations, and eliminating any remaining pockets of resistance. None of this would require the use of nuclear weapons, regardless of all of the talk about the importance of mini-nukes for the destruction of hardened facilities or terrorist groups hidden in deep caves.

In Fedosov's opinion, highly developed countries that have valuable infrastructure are under increasing public pressure to prohibit the absolute weapon—nuclear weapons—just as chemical and bacteriological weapons have been banned. On January 8, 2007, clearly responding to this attitude, the prominent former statesmen Henry Kissinger, George Schultz, William Perry, and Sam Nunn, who have expended considerable efforts in the past to argue for the irreplaceable role of nuclear weapons, proposed in the *Wall Street Journal* that reliance on nuclear weapons gradually be replaced, to debunk the powerful aura that accompanies them. This is not a new idea. In 1999, the "nuclear hawk" Paul Nitze also came out with the idea of rejecting nuclear weapons. In the United States this sort of enlightenment is sometimes referred to as the "retired politicians and generals syndrome." It is not surprising that many people currently working in the State Department, even those dealing with disarmament issues, had not even heard of the article written by the four former statesmen. At the same time as the retired policymakers are promoting disarmament, the current administration is moving in the opposite direction: the United States has adopted the Complex 2030 program that envisions the in-depth modernization of eight key U.S. nuclear weapons complex facilities and at least seven of the nuclear warheads that are now employed on nuclear weapons. These two trends are likely to continue fighting it out throughout the first half of the 21st century.

If Russia falls behind in the technological development and construction of precision weapons (both defensive and offensive), serious new risks and threats may arise. For the Russian military, moving to a mix of nuclear and non-nuclear weaponry (primarily, narrowing the gap with the United States and NATO in the equipping and developing of principles for the use of precision weapons by ground forces, the air force, and the navy in combat operations) should become a priority task in the near future. This does not mean that there should not also be attempts to limit the use of precision weapons by the United States and other Western countries through legal treaties and other agreements.

Under the current circumstances, the view of the role of tactical nuclear weapons is beginning to change; in U.S. policy these weapons are beginning to lose their importance.[27] Several concepts are being advanced that agree that it would make sense to develop a new international agreement that would cover both strategic and tactical warheads and delivery systems. It is unlikely that such negotiations could become a reality in the foreseeable future. Adding all

nuclear powers to negotiations on the reduction of the nuclear weapons, however, is long overdue.

SPACE ON THE AGENDA

The issue of space is an ever greater topic of concern. Several memorable anniversaries will be marked in 2007: 150 years since the birth of Konstantin Tsiolkovsky, the founder of theoretical cosmonautics; 100 years since the birth of Sergei Korolev, responsible for the Sputnik program; 50 years since the launch of the first artificial satellite; and 40 years since the signing of the Outer Space Treaty (which entered into force on October 10, 1967). As is well known, the treaty forbids the placement of nuclear weapons and other forms of WMD in space, the establishment of military bases and facilities in space, and the conduct of military maneuvers there. However, the issue of the deployment of weapons in space has arisen with new force recently, since the current agreement does not completely cut off the deployment of weapons in space based on new physical principles. Technical advances in the area of laser technology and electronics have nearly made it possible for certain countries to obtain military superiority over all others in space, particularly in the context of antimissile defense.

Russia has already officially stated at the United Nations that it is prepared to declare formally that it would not be the first nation to deploy weapons in space. Our partners, the Americans first and foremost, did not respond. Furthermore, on October 18, 2006 Washington promulgated a new national space policy based on a document signed by the U.S. president on August 31, 2006. This document supersedes presidential directive NSC-49/NSTC-8 of September 14, 1996. An initial analysis of the new document indicates, in my opinion, that the United States, acting unilaterally, is trying to ensure that it has complete freedom of action in space in its own national interests. It has declared its refusal to consider new legal norms of a prohibitive or limiting nature. It has proclaimed that Washington does not intend to allow other countries to have capabilities in space that it views as "hostile" to U.S. national interests. The right to determine what is "hostile," naturally, remains the right of the United States alone. Moreover, the U.S. Defense Department has been given the task of developing ways to prevent possible enemies from maintaining their freedom of action in space. Basically, the new U.S. space policy openly proclaims the long-term doctrine of achieving supremacy in space. This new doctrine does not directly discuss the possibility of deploying weapons, including nuclear weapons, in space. However, the Pentagon's task—to use capabilities in space to ensure an integrated multi-echelon antimissile defense system— fits perfectly in the tasks of the "new triad," and for this reason alone demands that discussions with the United States be held over the legitimacy of such an approach.

On February 10, 2007, speaking in Munich at an international conference on security policy, Russian President Vladimir Putin expressed his belief that an attempt to militarize space could lead to unpredictable consequences for the international community, and provoke nothing less than what occurred at the beginning of the nuclear era. The Russian president noted that Moscow had prepared a draft of an agreement to prevent the weaponization of outer space and would send it to all of its partners as an official proposal.[28] The "moment of truth" will come. Will a serious international discussion begin?

How realistic is it for such a discussion to begin given the current circumstances? There are provisions in U.S. doctrine that speak of the U.S. adherence to the idea of all countries conducting research or otherwise using space for peaceful purposes, as well as its support for mutually beneficial international cooperation. Apparently the United States is not completely closing the door to negotiations over some types of legal regulation of space activity.

While the U.S. Administration is declaring its opposition to the development of new legal instruments to prevent the further militarization of space, Russia should increase its efforts to keep space free of new types of weapons and develop measures that would help to ensure the predictability of the strategic situation in space. We will have enough allies in this area.

One should also keep in mind that the U.S. approaches to the space issue, like its approaches to other disarmament processes, follow a familiar pattern. First, as a rule the Americans are the

initiators of new arms races. Second, their unconcealed aim is to attain the maximum military advantage and attempt to maintain it for as long as possible. Third, it is becoming typical that even if they do not avoid the negotiations process itself, they avoid any obligations that might tie their hands or limit their maneuverability. Finally, the United States is trying to remove its most advanced military technology and weaponry from international and bilateral control.

On January 11, 2007, the People's Republic of China unexpectedly conducted an anti-satellite weapon test. At a height of over 800 km in space, the *KaiTuoZhe-2* missile destroyed the *Feng Yun 1S* satellite launched in 1999. Regardless of all of the disagreements in the analyses of the technical and legal aspects of the Chinese test, it is plain that the Chinese were sending a clear signal to the world that they do not plan to leave space to the Americans, and are prepared to fight for its use in the interests of their national security. There is a signal for Russia here too. We need clearly to determine and guard our own interests, and at the same time push public opinion to support the peaceful use of space.

WITHOUT TRUST, WITHOUT IRREVERSIBILITY

The current administration in Washington came to disarmament with the idea that the time of legally enforceable agreements was over, and that we should *lean* more on confidence-building measures and the like. The time of President Reagan, with his famous "trust, but verify," was transformed into "we insist on the complete verification of you, but you should not claim the right to verify us."

The problem is that Russia and other countries trust the Unites States less and less. And the situation is approaching a critical phase. START-1, with its carefully developed system of mutual information exchange and monitoring of implementation, will expire in 2009. Before the G8 summit in St. Petersburg, President Vladimir Putin called on our American partners to begin a dialogue about replacing this key treaty with appropriate agreements. The year 2007 has come and the matter has barely been touched. Doubts arise: is the Bush Administration, which became a "lame duck" administration after the November 2006 elections, capable of constructive achievements in the disarmament sphere?

To date, Russia has attained one far-reaching arms control achievement with the George W. Bush Administration: the 2002 Strategic Offensive Reductions Treaty (SORT), the fulfillment of which will lead to the dismantlement of an additional 1,000 nuclear warheads. But it too will end fairly soon: in 2012. A high estimation of this agreement on behalf of the global community was given by U.N. Secretary-General Kofi Annan, who nevertheless took the opportunity to remind all that "the United States and the Russian Federation... must do more, including... pursuing arms control agreements that entail not just dismantlement but ***irreversibility***" (emphasis mine—author).[29]

The latter is of fundamental value. The SORT agreement, due to U.S. obstinacy, does not resolve the problem of reversible capabilities, that is, the majority of warheads are removed from service but not destroyed—they are simply put in storage. If needed, they can be returned to use. In the mid-1990s, U.N. Under-Secretary General Jayantha Dhanapala pushed the idea of *decoupling*—removing warheads from delivery systems and storing them separately—a concept very similar to the one used in SORT. However, even then many experts expressed doubts that this would be an effective disarmament measure. They said that this was more of a confidence-building measure. But it was already clear to experts that the very construction of this agreement was vulnerable to abuse. Under these circumstances, the slogan "verify" is particularly urgent where the United States is concerned, since it intends to maintain 1,500 nuclear warheads in so-called "reserves."[30] The U.S. and Russian approaches have diverged.

This has also been made fairly clear by the consequences of the Bush Administration's destruction of the ABM Treaty. Recent plans to establish a so-called third missile site in Europe very near Russian territory, for the deployment of part of the multi-echelon missile defense system, allegedly against Iranian missiles, was in fact a step planned long ago. The point here is not the Iranian threat so much as U.S. plans to obtain yet one more lever to use to pressure not just Russia, but its European allies as well.

NUCLEAR TESTING

Russia's strategic relations with the United States take a variety of forms, from the great number of issue areas where we relate on a bilateral basis to our mutual interactions within the framework of various multilateral agreements and negotiations. Here I would like to point out two particular sore points: ratification of the Comprehensive Test Ban Treaty (CTBT) and the issue of the compliance protocol to the Biological and Toxin Weapons Convention (BWC).

In the case of the CTBT, on its enormous financial and technological superiority the United States initially expected to *suffocate* its partners in the nuclear club, Russia and China first and foremost, through the tenacious embraces of the CTBT. The Republicans inherited this policy from the Democrats. To some extent, they also based, and continue to base, their calculations on the idea that given a moratorium on nuclear testing (the moratorium beginning in 1992 under the CTBT along with the longer-term unilateral Soviet moratorium), the speed of the degradation of Russian nuclear weapons would grow sharply and the years with the CTBT in force would conclusively lock in the significant U.S. nuclear advantage.

Indeed, in a number of areas Russian nuclear warheads may be inferior to the most advanced U.S. nuclear warheads. But because our construction occurred under less "stressed" conditions, our experts were able to install higher margins of reliability, given the uncertainties about factors related to aging. This practice paid for itself many years ago, though the issue requires the continued vigilance of our nuclear specialists. But what about the Americans? Despite all of their contrivances and precision construction, U.S. nuclear warheads have proven to be quite capricious and extremely sensitive to the effects of aging. An analysis of the intentions expressed in the Reliable Replacement Warhead (RRW) program indicates that it is precisely ensuring the reliability of warheads that has become a difficult issue for them. In the RRW program they declare that their goals will be met without nuclear tests. Whether they can succeed in this is a big question. At the very least, the as-yet-unsuccessful attempts by the current administration to obtain congressional approval for a reduction of the timeline to ready the Nevada Test Site from 36 months to 18 months raise suspicions.[31] The United States has become a hostage to its earlier policy and is going to try to find any possible way to renew tests of the reliability of its nuclear arsenal at the minimum political cost to itself. Therefore, we should also expect increased attempts to reinvigorate the "race" for scientific and technological advances between the nuclear weapons complexes of the nuclear weapon states. Huge expenditures are already being made on computer simulation and on the equipping of test ranges for non-explosive testing. We should expect that there may be additional big surprises emanating from the United States in this area in future.

Although Russia (unlike the United States, which is betting on a preemptive and preventive disarming strike) only has plans to use nuclear weapons as a response to aggression, we too need more powerful munitions. Since we do not have a surplus of nuclear weapon delivery systems, we must maintain the existing arsenal at the necessary quantitative levels (though this does not mean the current levels cannot be reduced). This also ensures the success of nuclear deterrence. As the great Lomonosov wrote to Count Shuvalov in his letter of November 1, 1761, this "is the task of maintaining the military art in times of lasting peace."

NEW THEATERS OF MILITARY ACTION

The group of individuals currently in control of the U.S. Republican Party is actively carrying out a "revolution in military affairs" that was actually begun under President Bill Clinton. Basically, the idea is that the U.S. military should be re-equipped with new technology and optimized so that the U.S. leadership can project U.S. power globally, to any part of the world. Naturally, these aspirations required a political framework, which took the form of the "revolution in strategic affairs" concept. However, the George W. Bush Administration has expanded his predecessor's plans considerably.

Under this revolution, the U.S. military has begun operating in fundamentally new theaters. It is astonishing, but most of these new theaters have proven to be on former Soviet territory: the Caucasus, Central Asia, the Caspian Sea, etc. The realization of this concept in practice should

be closely watched by the Russian leadership. For example, why do we need the creation of the so-called *Caspian Guard* according to a U.S. scenario, which naturally involves the critical participation of the U.S. Armed Forces, a country neither geographically nor politically belonging to the region? After all, Russia has already proposed the creation of a military force to ensure Caspian security (CASPFOR). Why compete?

IS THE CFE NEEDED?

The conclusion of the 1990 Treaty on Conventional Armed Forces in Europe (CFE) was a great achievement of multilateral diplomacy and negotiation. When the CFE was concluded, hopes were raised that we were on the way to strengthening European security and stability. Initially, this was true. For 16 years all of the treaty States Parties, Russia first and foremost, reduced heavy weaponry by a combined total of 63,500 pieces, while military personnel were reduced by more than two times: to three million persons. The CFE is still a key element in NATO-Russia relations, but is gradually losing its urgency and its logic.

Firstly, thanks to the radically changed political and strategic situation in Europe, already questionable concepts like flank limitations within national borders, which currently only apply to Russia and, partially, to Ukraine, are, in our opinion, completely senseless. In their day, they greatly interfered with Russia's ability to conduct counter-terrorist operations in the North Caucasus. The author, as a participant in developing the mandate for the CFE negotiations, remembers well how Russia compromised with the West, particularly Turkey, in determining where the border of the so-called "exclusion zone" would be drawn through Turkey in Asia Minor where, according to the Turkish military, they were undertaking counterterrorist operations against rebel "mountain Turks" (in reality, Kurds). The West did not meet Russia half-way in the North Caucasus until the United States and Europe themselves were affected.

Even today, they continue to remind us about the so-called "complete fulfillment" of the Istanbul Commitments and have therefore blocked ratification of the adapted CFE Treaty for many years. This raises two questions. The first is whether there is a common understanding, in the West in particular, as to what the "complete fulfillment of the Istanbul Commitments" is? And second, in our view the current version of the adapted CFE Treaty has so aged that it must be adapted anew, taking into account the elimination of the "gray zone" when the three Baltic states joined NATO and the consequences of the most recent NATO expansion, as a result of which the states now entering the Western bloc are now using arms quotas that they formerly acquired as states that did not belong to this bloc.

As an active participant in the negotiations, I still remember one of the remarkable NATO arguments in favor of as large reductions as possible in what were then Soviet weapons: the very particular regional pattern of the force posture on Soviet (Russian) territory. We asked our NATO counterparts why they insisted on these complications, and if they really thought we intended to attack them. To which they very calmly replied: "No, we are certain that you do not plan to attack us, but you have *military capabilities* that project into sensitive NATO regions, so we need geographical troop limitations in addition to quantitative limits." Mikhail Gorbachev decided to meet the wishes of our Western partners halfway, given that it appeared that they were making sincere declarations about friendship and cooperation, including the assertion that they had no intention of expanding NATO. We all know what happened then. It is time to show the West common sense in practice and make reciprocal moves.

A lot of water has flowed under the bridge since that time. Russia lived through a long period of weakness that our partners took advantage of as much as they could. It has come time to tell our NATO partners the same thing they once told us: **"You may not intend to attack us, but your *military capabilities* and, most importantly, their deployment along Russia's borders, raise our honest suspicions, and even Russia-NATO cooperation can by no means remove all of our concerns."**

As a person involved in formulating the CFE Treaty, it is especially sad for the author to realize that the treaty's current form does not meet currently ensure equal security for all countries on the European continent, and moreover does not sufficiently meet Russia's own national secu-

rity interests. However, rejecting the outdated, but very important document without proposing anything in its place is easy. It would be more proper and reasonable if Russia were to come out with a full-fledged vision for the provision of security in Europe today and in the future, taking into account present realities, that could incorporate current ideas about ensuring the balance of interests of all countries.

More than 100 years ago, one of the first Russian experts in geopolitics, Aleksey Vandam (the pen name of Major General of the Imperial General Staff Aleksey Edrikhin), wrote an interesting recommendation: "In Europe we should by no means put our head on the pillow of agreements with peoples whose skill in the fight for life is much more advanced than our own; we must rely on ourselves alone."[32] This observation by the tsarist general and Russian patriot appears especially accurate today, when we more and more often hear Western statements averring that Russia's energy riches should supposedly belong to the entire world (by which they mean the West).

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The Bush Administration and the Putin Administration are both entering the presidential election cycles in their countries. The acting heads of state in these two countries are not likely to have time to solve all of the problems that have accumulated in the area of arms control. But we have the right to expect that they **at least start projects so that their successors can continue this work of global importance**, strengthening security and strategic stability, particularly in the nuclear sphere. It appears that Russia is basically ready for this. But are our American partners?

Carl von Clausewitz wrote, "People's main error is that they fear today's misfortunes more consequences of dangerous new military technologies and classes of weapons through timely political and legal steps. Otherwise, a long and debilitating arms race and new, difficult crises and confrontations await us once again.

Notes

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[3] Russian Ministry of Foreign Affairs, "On the Ratification of the Agreement between the Government of the Russian Federation and the Preparatory Commission of the Comprehensive Test Ban Treaty Organization (CTBTO PC)" (in Russian), Press Release No. 2254 of December 25, 2006, No. 3, <http://www.mid.ru/brp_4.nsf/sps/E7AA5E4E17B6B0B6C325724F002F2EE9>, (last accessed February 21, 2007).

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Andrei Frolov

IRAN'S DELIVERY SYSTEMS CAPABILITIES [1]

In late 2006 the United States announced plans to deploy elements of an anti-missile defense system in Eastern Europe. The White House's official justification for the plans was the need to defend Europe against Iran and North Korea--states that possess or intend to possess nuclear weapons. The deployment of U.S. missile interceptors in Poland and radars in the Czech Republic has already resulted in a confrontation between the West and Russia. Russians believe that the U.S. arguments are groundless, and recently proposed the joint use of the Soviet-built radar in Azerbaijan. But does Iran really have the capability to create nuclear weapon delivery systems such as ballistic missiles, bombers, and submarines?

The examples of official nuclear weapon states, as well as India and Pakistan, indicate that nuclear weapons did not appear in a vacuum, but together with means of their delivery. Moreover, in many respects it was these delivery systems that determined the mass and dimensions of the warheads as well as their possible applications. Furthermore, in all of the above countries, with the possible exception of Pakistan, the first delivery system, chronologically, was aviation, and only later were ground-based and sea-based missiles developed. Before testing their first usable nuclear bombs, all of these countries already had aircraft in series production that could be employed at the tactical and, partially, the intercontinental level (at least via the "one-way ticket" tactic, like the Soviet Air Force's *Tu-4* and *M-4* bombers).

The examples of North Korea and, partially, Iran (if one assumes that the Islamic Republic of Iran does in fact intend to develop nuclear weapons) are of particular interest here. When you begin to analyze the data about their missile and nuclear programs carefully, you cannot fail to think about the "chicken and egg" dilemma: what comes first and what follows in these states' military strategy—the creation of a nuclear bomb, which will necessitate the development of means of its delivery, or the relatively successful development of means of delivery leading to an acceleration of nuclear weapons programs?

BALLISTIC MISSILES

At present, Iran is one of the most "dynamic" missile states. This is attested to by the fact that from the mid-1980s through the end of the 1990s there were 23 known missile programs in the country, a record unsurpassed in recent years.[2] By 2000-01 Iran had nine programs for the production and development of ballistic missiles.[3] The Iranian missile program, which took the shape in the 1990s through the testing and production of the *Shahab* missile, is the result of

long-standing work by the Iranian leadership, resting on a foundation established under the Shah's regime.

Already in the 1970s, Iran had concluded a number of agreements with U.S. firms not just for the production of aircraft fuselages and "surface-to-air" missiles in Iran, but also for joint production of "surface-to-surface" missiles with a throw-weight of 350 pounds (approximately 140 kg).[4] One should also note that in 1974 the United States exported *MGM-52 Lance* missiles to Iran with a range of 130 km.[5]

As a result of the Iran-Iraq war, Iran entered into the "closed" club of states that had made substantial use of ballistic missiles in war. There are few such states: Germany (in 1944-1945, using *A-4* rockets, also known as *W-2*), Egypt (a limited number of Soviet *SCUD* missiles were used against Israel in the 1973 war), Iraq, the Soviet Union/Russia (*FROG-7* missiles in Afghanistan, *SCUDs* and *Scarabs* during both Chechen wars), Afghanistan (after the departure of Soviet troops in 1989, the Afghan government used *FROG-7* and SCUD missiles against the mujahedin), Libya (in the border wars in Chad, as well as when they fired at the U.S. base on the Italian island of Lampedusa in 1986), Yemen (*SCUD* and *Scarab* missiles were used in the civil war in 1994) and Yugoslavia (in Kosovo).[6] Among these nations, Iraq and Iran occupy the second and third places in terms of the number of missiles fired (Germany is in first place, with 3,165 combat launches of the *A-4* missile, of which 543 exploded on launch[7]).

Thus, Iraq had already fired *FROG-7* tactical missiles at its opponent in 1980, in total launching approximately 70 at Iranian cities.[8] Subsequently, Iraq moved to the use of medium-range *R-17 (SCUD-B)* missiles. In 1983, 37 missiles were launched at Iran, both at Tehran and at other sites.[9] In 1985, Iraq was already launching 82 missiles at its enemy.[10]

The "war of the cities" exerted a strong influence on the Iranian leadership and its determination to develop its missile program. As a result of Iraqi missile attacks, approximately 5,000 people (the overwhelming majority of whom were civilians) perished. The missile attacks had a significant psychological and social influence on the country's population, primarily due to the constant fear of being harmed by the "dumb" weapons, which the Iraqis predominantly used again densely populated parts of the country.

Due to its inability to defend against Iraqi missiles, Iran decided to obtain its own missiles. It therefore expanded the military industrial base created under the Shah, made significant investments in rocketry R&D, and initiated cooperation in this sphere with the PRC, North Korea, Libya, and Syria, and undertook large-scale missile purchases. These efforts already began to produce results in 1985, when the Iranian military, the Islamic Revolutionary Guards in particular, obtained the first mobile *SCUD* missiles.

The first ballistic missiles came from Libya, with which negotiations had begun in 1984. According to foreign sources, in 1985 the first tranche of 20 missiles and two *MAZ-543* transporters arrived in Iran.[11] At the time, Iran's missile units supplemented the air force's significantly weakened strike power.

Iran began producing missiles nearly immediately. The country produced 14 ballistic missiles in 1985, 16 in 1987, and 76 in 1988.[12]There are reports that during the war, Iran launched 120 *SCUD-B* ballistic missiles at its enemy, with a maximum range of 325 km.[13] Iran's strategy was to target civilian Iraqi sites exclusively to stave off missile strikes on its own cities and industrial facilities, i.e. scare tactics were used.[14] It became clear that in order to counter the Iraqi threat, both at the time (of military actions) and in the future, Iran needed ballistic missiles with a variety of ranges and warhead yields. There were two possible ways to meet this goal: importing complete missile systems or arranging for domestic production and the assembly of imported components.

By 1987, it became clear that Libya and Syria could no longer meet Iran's ballistic missile needs; thus, Iran's attention turned to North Korea, which not only had a significant number of the same type of ballistic missiles in its arsenal, but also produced them. Therefore, beginning in 1986-87, Iran's main partner in the missile sphere became North Korea.

Available information indicates that in the late 1980s Iran pursued both methods of obtaining missiles. In 1987, the Iranian government stated that the country was then producing a certain number of *Shahab-1* missiles.[15] Western analysts believe that a Soviet *R-17* missile, which had been obtained from Libya, served as the model for them.[16] Most likely, at this stage Iran was actually undertaking the "turn-key assembly" of "missile complexes" supplied from other countries, primarily North Korea. Thus, during the Iran-Iraq war, North Korea supplied Iran with about 100 *SCUD-B* missiles and equipment for their production. According to other sources, in 1987-92 North Korea supplied about 200 ballistic missiles and 6-12 mobile launchers.[17] Although in the beginning the missile program was run out of the Islamic Revolutionary Guards, by 1989 production facilities had already been put under the Defense Industries Organization. But the missile units continued to be directly under the jurisdiction of the Islamic Revolutionary Guards. At about this time, Iran switched to completely independent missile production. The characteristics of these missiles were fairly similar to the Soviet *R-17*: a flight range of 50-300/320 km, a warhead mass of 985 kg, and a maximum error of 450-800/1,000 m.[18] The *Shahab-1* turned out to be the most "martial" Iranian missile: during the Iran-Iraq war about 90 were launched, while in 1994-2001 another 50-80 more (according to different sources) were launched at rebel bases in Iraq.[19]

In 1991, North Korea began supplying perfected *SCUD-C* missiles to Iran, which the Iranians designated the *Shahab-2*. According to foreign expert assessments, about 60 missiles assembled in North Korea were supplied to Iran, while in late 1991-early 1992 Iran began to produce them independently.[20] Western experts estimate that approximately 170 missiles of this type were produced.[21] This missile represents a significant step forward in comparison to the previous version, since its maximum flight range is 500 km (its minimum is 50 km), the warhead weighs 500 kg, and its maximum error is 1,000 m.[22]

According to Western sources, cooperation between these two countries was not limited to this. In 1991, in addition to providing *SCUD-C* missiles, North Korea provided technical assistance in the development of *Shahab-3* missiles (in the mid-1990s, Western sources also believed that this project was initially called the *Zelzal-3*[23])—particularly in the area of increasing missile accuracy—which, according to the experts, are a further development of the North Korean *Nodong-1* ballistic missile.[24]

Strong working-level ties were established between the two countries in the early 1990s. Thus, in April 1993 the first group of Iranian experts—a group of 15 men headed by Brigadier General Manteghi, head of the Defense Industries Organization, arrived in North Korea.[25] After this first visit, there were supposedly over 300 more Iranian experts who received instruction in North Korea.[26] According to Western media reports, Iran initially planned to purchase and produce at its own factories a total of about 150 *Nodong* missiles.[27] These assessments indicate that North Korea supplied Iran with 5-12 ballistic missiles and four launch systems in 1994-97.[28] In 1997-2002, a second tranche of North Korean missiles was supplied, about 20 "missile sets" in all.[29] According to 2001 estimates, Iran planned to produce on the order of 20 missiles per year; small-scale production using North Korean engines had already begun by 2001.[30] Evidently using both the missiles it already had and in expectation of new supplies, in 2000 the Islamic Revolutionary Guards created five new missile units armed with *Shahab-3s*.[31]

It is interesting to note that the missiles and components were probably sent from North Korea to Iran by air. In June 2003 the South Korean newspaper *JoongAng* reported that since April 2003, an Iranian *Il-76* medium-sized transport aircraft had been noted at the Pyongyang airport Sunan several times. This plane apparently transported the dismantled *Nodong* missiles in containers.[32] The South Korean journalists also reported that through 2003, Iranian transport workers were seen in North Korea at least twice a year.[33]

As was mentioned above, the *Shahab-3/Shahab-3D* was based on the North Korean *Nodong-1* and is the first missile that can reach Israeli territory.[34] It is also interesting that there are reports that Iran co-sponsored development of the *Nodong-1* missile in North Korea, and conducted negotiations on the purchase of 150 missiles in exchange for oil.

Foreign sources indicate that Iran began to produce missiles in 2001, but at first was using missile engines imported from North Korea.[35] The missile's range is on the order of 1,300 km,[36] its warhead mass is 1,000 kg,[37] and the *Shahab-3's* maximum error was estimated to be 0.08 percent of the distance flown, or about one kilometer, which would appear to be mistaken.[38] There are reports that Iran is also undertaking efforts to increase the range of the *Shahab-3* by 1,300-1,600 km. Furthermore, work on modernizing the *Shahab-3* is being conducted as an alternative to the development of the new *Shahab-4* missile, which was shut down in November 2003.[39]

In June 2005, a solid-fuel *Shahab-3* missile (according to the Iranian Defense Ministry) reached a distance of 2,000 km during a test launch, along with an increase in accuracy.[40] From the technical point of view, however, re-equipped *Shahab-3* with solid fuel actually appears to be a new missile. One should also note that in late 2004, Israel reported that the improved *Shahab-3/Shahab-3D*, with the help of a Chinese guidance system, had decreased the maximum error range to 250 m, which is clearly an exaggeration.[41] As of May 2004, 20 ballistic missiles were considered combat-ready.[42]

Modernization basically consists of converting the *Shahab* family of missiles to solid fuel. In May 2005, Iranian Minister of Defense Ali Shamhani announced that Iran had conducted a successful test of a solid-fuel engine for the *Shahab-3* ballistic missile. Furthermore, it was noted that "the use of solid fuel makes it possible to increase the missile's storage period and improve its accuracy."[43] Therefore, one cannot exclude the possibility that Iran has conducted tests for other missile families, or that Iran is developing a new solid-fuel missile that would represent a qualitative jump in its missile program. In any case, this event indicates that Iran intends to pay serious attention to the development of solid-fuel engines for intermediate-range missiles, which unavoidably places increased requirements on Iran's missile and chemical industries.

It should also be recognized that Iran has had combat experience using *Shahab* missiles since the Iran-Iraq war. As mentioned above, during the low-intensity conflict through 2001 between Iran and the opposition Muhajedin Khalq party (also known as the People's Muhajedin of Iran) based in the Iraqi border regions, the Iranian military launched 58-77 *Shahab* (of unknown modifications, but most probably *Shahab-1* and *Shahab-2*) ballistic missiles at enemy bases.[44] This was clearly due both to the limited ability of the Iranian air force to deliver retaliatory strikes at bases located on the territory of the neighboring state, as well as, probably, the desire to test the effectiveness of missiles assembled domestically through large-scale use in a real combat situation.

In the West, there have also been discussions about Iran's possible development of *Shahab-4* missiles, which are likely either the further development of Soviet *R-12* missiles (which is a rather far-fetched assumption, given that the last *R-12* was decommissioned in May 1990) or an improvement on the *Shahab-3* analogous to Pakistan's *Gauri-2.*[45] In fact, the first mention of the development of the intermediate-range *Shahab-4* missile was made by Israel in the mid-1990s; indeed, in 1997 Israeli experts noted the Iranian development of missiles with ranges of 5,500 and 10,000 km![46] According to information provided by Iranian opposition groups, the *Shahab-4* has a range of 2,000 km and a throw-weight of 1.4 tons.[47] However, official Iranian representatives have stated that the *Shahab-4* development program has been discontinued.[48] Moreover, as early as 2000 it was announced that the *Shahab-4* designation had been given to a space satellite launch vehicle.[49]

It is noteworthy that after yet another test of a *Shahab-3* in June 2005, Iranian Minister of Defense A. Shamhani stated that "The *Shahab-3,* which was tested using solid fuel, could be called the *Shahab-4*, however, in principle, the missile designation itself is not important."[50]

The charges that Russia helped the Iranian missile program are overstated. Iran received help on a considerably greater scale from North Korea—virtually all of the ballistic missile production infrastructure for the *Shahab* missile family was created by Iran with North Korean assistance. It is clear that this cooperation went in stages: first the purchase of complete missiles, then supply of components for assembly at Iranian enterprises, and finally assistance in mod-

ernizing missiles and organizing the production of new missiles types. It is quite possible that joint work will continue in future; furthermore, Iran may well take upon itself the funding of research and development work, something that has already occurred in the past. If the international situation sharply deteriorates, the supply of complete systems to Iran also remains possible.

In addition to the liquid-fueled *Shahab* missiles family, the Iranian missile arsenal also includes solid-fueled missiles: the Chinese *CSS-8* (called *Tondar-69* in Iran) and the *Fateh*. *Tondar-69* is an alteration of the Chinese copy of the Soviet "surface-to-air" *S-75* (the Chinese version is called *HQ-2* in the West), built in the PRC, turned into a "surface-to-surface" missile. The *Fateh A-110* is a relatively new missile, the existence of which was only officially announced in September 2002 when Tehran's official representatives declared the successful launch of a missile of this type.

According to available information, the *Fateh A-110* is single-stage missile with a range of 200 km, warhead mass of 500 kg.[51] According to official statements, Iran makes both the missiles and the solid-fuel engine for them independently, and has built a special plant for their construction.[52] The missile's maximum error, in the opinion of U.S. experts, is about 100 m.[53] The missile's one drawback is its fixed launcher, though Western experts believe that work on a mobile launcher for this missile is ongoing.[54]

The *Nazeat* missile family could be considered the "oldest" of those developed and produced in Iran. Work on this system began in the late 1970s; assistance was received from North Korea, China, and possibly even Brazil.[55] A significant number of types of this missile have been created. The *Nazeat N-5* and *N-6* were used in the war with Iraq. The maximum range of the *N-5* is 105 km, the *N-6* is 120-130 km, and the *N-10* is 150 km. The warhead mass of these types is 150 kg, though in the *N-8* this was increased to 300 kg (in the *N-10* warhead mass was once again reduced, to 250 kg, apparently to increase range).

It appears that Iran is also developing a solid fuel missile program based on the Chinese *M-11* (*DF-11/CSS-7*) and *M-9* (*DF-15/CSS-6*). The former reportedly has the Iranian designation *Tondar 68* or *Gadr*.[56] As it is related to Pakistan's *Ghazvani* missile, which flew 290 km during a test in 2002, it is likely that the Iranian version has a similar range. The *Tondar 68/Gadr* is apparently equipped with a 500 kg warhead that can separate during flight, which theoretically makes it more precise than the *Shahab-2*.[57] An important feature of the Chinese version of the *M-11* is its capability of being launched from a mobile launcher based on the *MAZ-543*, which, given Iran's possession of similar launchers, means that the *Tondar 68/Gadr* can likely be launched from them.

Reports indicating that Iran has been developing a second solid-fuel missile program on the basis of the Chinese *M-9* are fragmentary at best. Western analysts estimate that the Iranian version of the missile can deliver a 320 kg warhead a distance of 800 km.[58]

It would appear that the Chinese missiles will be developed in parallel with the improvement of the *Shahab* liquid-fueled missile. Given the situation with the North Korean nuclear program—Pyongyang has been threatened with virtually total international isolation since its test of a nuclear device—Iranian cooperation with North Korea may come to a temporary halt or become significantly more complicated. Therefore, it would not be surprising if the "Chinese" path were developed more dynamically. Moreover, intermediate-range solid-fuel missiles have been the core development choice in many countries of the world, including the new Chinese intermediate-range missiles and SLBMs.

In 2006, Iran's tests of the new *Saegheh* "surface-to-surface" tactical missile class were reported. In August 2006, Iranian televisions reported 10 test launches of new missiles at one of the military test sites, during the course of which a range of 80-250 km was achieved.[59] Other characteristics of the missile were not provided.

Table 1: **Main Specifications of Iranian Ballistic Missiles**

Name	Range, km		Mass, kg		Maximum	Type of
	Min.	Max.	missile	warhead	error, m	engine
Nazeat N-6 (*Iran 130*, *Mushak 120*)	unknown	105	unknown	150	unknown	solid
Nazeat N-8	unknown	unknown	unknown	300	unknown	solid
Nazeat N-10	unknown	150	unknown	250	unknown	solid
Zelzal-1	unknown	100-150	unknown	600	unknown	solid
Zelzal-2	unknown	350-400	unknown	600	unknown	solid
CSS-8 (*M-7*)	unknown	150-180	unknown	190	unknown	liquid
Shahab-1 (*SCUD-B*)	50	300	5862	989	450 –1000	liquid
Shahab -2 (*SCUD-C*)	55	700	6400	700	1000	liquid
Shahab -3 (*Zelzal-3*)	unknown	1300-1500	16000	760-1100	1000	liquid
Shahab-4	unknown	1800 – 2000	22000	750-1000	unknown	liquid
M-11	unknown	290	unknown	500	unknown	solid
M-9	unknown	800	unknown	320	unknown	solid

Figure 1. **Iran's Main Missile Production Centers**

Source: http://www.waronline.org/mideast/iran_wmd.htm

Note: centers for cooperation in the production of Iranian missiles:

- ❑ Isfahan: R&D, missile production, fuel production;
- ❑ Semnan: production of tactical missiles, test site;
- ❑ Shahroud: R&D, missile fuel, and test site;

- ❑ Shiraz: R&D, production of missiles and missile fuel;
- ❑ Sultanatabad, Lavizan: R&D;
- ❑ Kukh-e-Barjamali: production of measuring equipment for tests.

Sites of small enterprises involved in cooperation for the production of missiles:

- ❑ Abadan: missile production;
- ❑ Aliabad: missile launcher equipment;
- ❑ Arak: R&D, *SCUD* reequipping (modification) plant;
- ❑ Bandar Abbas: missile production;
- ❑ Dorud: R&D;
- ❑ Gamsar: test site;
- ❑ Gostaresh: R&D;
- ❑ Karaj: R&D, missile production;
- ❑ Khoramabad: missile production;
- ❑ Manzariyah: R&D, missile fuel production;
- ❑ Mashhad: missile production (missiles, solid-fuel engines);
- ❑ Okaraman: missile production (parts for the *Shahab*);
- ❑ Parchin: missile production (solid-fuel engines, guided air-defense missiles, anti-tank guided missiles, airborne missiles, parts for the *Shahab*);
- ❑ Sarji: missile production;
- ❑ Tebriz: missile production (*Shahab*);
- ❑ Tehran: R&D and missile production.[60]

Along with the development and production of its own missiles, Iran necessarily needs launchers for them as well. The 1991 military clash between neighboring Iraq and the coalition of predominantly western states clearly showed the strong and weak points of various types of launchers. Iraq used both mobile and stationary launchers to launch *SCUD* missiles, an inheritance of the Iran-Iraq war when the enemy did not pose a threat to them. The danger Iraq's ballistic missiles posed for its enemy is indicated by the fact that on the first day of Desert Storm, January 15, 1991, 11 percent of the targets were parts of the *SCUD* missile complex (the same proportion as air defense system targets; while command, communication, and control centers made up the greatest share of targets—16 percent; i.e. missiles and air defense were in second place as far as coalition priorities were concerned).[61]

During the first days of the war all stationary launchers were attacked, of which 12 were destroyed and 13 damaged.[62] However, the mobile installations, which were estimated to total 30-50, remained through the end of combat. Coalition air forces only managed to hit "facilities with characteristics similar to launchers"[63] eight times.

Iran obviously studied the Iraqi experience carefully; the issue of how to ensure launcher survivability is one of the most urgent for Iran. Iran has evidently bet on the use of mobile launchers; however, in the mid-1990s there were reports that Iran had built an underground bunker system for *Shahab* missiles on the banks of the Persian Gulf.[64] Western analysts believe that missiles launched from these bunkers could reach Oman, Qatar, and the United Arab Emirates (UAE).[65]

Nevertheless, it would seem that plans call for most of the missiles to be launched from mobile launchers. In the late 1990s, the number of launchers based on the Soviet *MAZ-543* and German-built trucks was estimated to be about 100.[66]

Iranian missile launchers will still, however, remain very vulnerable in the face of an enemy with a powerful air force. The example of Israel's campaign in Lebanon in July confirms this fact. According to information from Israel's AMAN military intelligence, at the beginning of combat actions the air force destroyed 59 Iranian *Zelzal-2* and *Fadjr* launchers.[67]

CRUISE MISSILES

Iran has had considerable success in the development and production of cruise missiles. True, here we are primarily talking about anti-ship missiles, but they could potentially be used against surface targets as well. The main Iranian surface-to-surface missile class is a local copy of the Chinese *CSSC-2 Silkworm (HY-1)* and *CSSC-3 Seersucker (HY-2).* Western sources indicate that in 1987 Iran began production of this type of missile with the assistance of the PRC and the DPRK, then later turned to production of improved models of their own design. It is also possible that while working on increasing the range of the *CSSC-2*, Iran made use of the Iraqi *FAW-150* and *FAW-200* cruise missiles, which are also based on a Chinese prototype.[68] The *CSSC-2* warhead weighs 400 kg, while the *CSSC-3* is 513 kg, which theoretically makes it possible to accommodate a nuclear device on the latter.[69] The Iranian version of the improved *CSSC-2* was designated *Piruzi-75*, but work on it ended in 1996 when all attention turned to producing more advanced models: the Chinese *C-801* and *C-802.* In 2004, Iran demonstrated yet another modification of the *CSSC-2* called the *Raad*, which reportedly carries a 500 kg warhead some 150-400 km.[70]

Work on the Iranian versions of the *C-801* (*Karus*) and *C-802* (*Tondar*) are believed to have begun in 1996. The *Karus* has a range of 40km, while *Tondar's* is 120 km. It has been noted that both missiles can not only be launched from ships, but also from mobile launchers for coastal defense.

The story of Iran's acquisition of Soviet *Kh-55* missiles is worth describing in detail. The new Ukrainian government has acknowledged that *Kh-55* cruise missiles were sold to Iran. According to some reports, 12 missiles were sold to Iran, while six KNO-120 ground equipment systems were sold to China (although according to other reports, there were six units sold to each country). These missile systems cannot be deployed on Iranian aircraft, even the "mythical" *Tu-22M* (more on this aircraft below), which were armed with *Kh-22* and *Kh-15* missiles.[71] The *Kh-55* can only be launched (moreover, only with a nuclear warhead) from a *Tu-95MS* or *Tu-160* strategic bomber, which at the present time are only present in the Russian arsenal. Thus, one can confidently say that the *Kh-55* that ended up in Iran can only be used for the study of Iranian experts. Furthermore, airborne delivery systems were transferred from Ukraine to Russia, reportedly together with the relevant *Kh-55* nuclear warheads.[72]

In late July 2005, the Iranian opposition came out with information that the Islamic Revolutionary Guards had mastered the production of the *Kh-55*.[73] It is rather difficult to evaluate the veracity of this information, since the announcements of the Iranian opposition are often false, but one cannot completely ignore the possibility that Iran has become capable of using the relevant technologies.

The *Kh-55* is a highly perfected weapon, despite the fact that development of the missile began in 1976 and the first one was officially commissioned in December 25, 1979 (the first to be produced via serial production was completed on February 23, 1981). With an official maximum error of 100 m, the Soviet air force was able to obtain results with a deviation of just 20-30 m, making it possible to characterize the *Kh-55* as a "high precision" weapon.[74]Its range is 2,500 km, and warhead is 410 kg. The missile is guided by an autonomous inertial navigational system (INS) with corrections based on the local geographical relief. The basic flight regime is at minimum altitude (50-100 m), following the lay of the land, at speeds of 500-700 km/hour.[75]

There is yet one more aspect of the Ukrainian *Kh-55* story worthy of note. Already in March 1978, a decision was made to develop series missile production at the Kharkiv Avionics Association (KhAPO). And although a decree on the cessation of *Kh-55* production at KhAPO and the transfer of equipment and parts to the Kirov Mechanical Plant was issued in December 1986, it is well known that the following March the plant completed 16 modernized *Kh-55SM* missiles for tests of the new missile system.[76]

Thus, one cannot exclude the possibility that the necessary specialists remained at the plant, as well as some of the equipment, parts, documents, etc., that would make it possible not simply to restore the units that remained in Ukrainian military storage, but also to use them, or parts remaining at the plant, to bring some *Kh-55* up to, for instance, the level of the *Kh-55SM*

(with an increased range). This would theoretically make it possible for Iranian experts to obtain access to the most advanced long-range cruise missile, and if there were exchanges with Pakistani missile experts, very interesting joint developments could be obtained.

One must assume that the missiles were unlikely to have been produced in their original form as strategic missiles. This is due both to Iran's lack of equipment to obtain a detailed "picture" of a potential opponent's targets for the INS as well as the lack of delivery systems with the precise navigation needed for the INS to work. Moreover, the special design features of the *Kh-55* (suspension with four spread-out attachment joints, instead of the traditional suspension from a single joint) require a special launcher, which Iran is unlikely to be able to develop.

But it is possible that the *Kh-55* could be used as a basis for the creation of a tactical cruise missile (like the Pakistani *Babur*) with a range of 500-600 km, which would have the key advantages of greater mobility, accuracy, concealment, and lower cost. Moreover, a smaller range would make it possible to increase warhead mass and, correspondingly, the likelihood that the missile will be equipped with a nuclear warhead.

AIRBORNE DELIVERY SYSTEMS

The Iranian air force has a large number of aircraft; however, only the third and fourth generation equipment meets minimum modern requirements: the U.S. *F-4* and *F-14* fighter planes, French *Mirage F-1*, and Soviet *Su-24MK* front-line bombers and *MiG-29* fighter planes. Of these, only the *F-4, F-1, Su-24MK* and *MiG-29* are of relatively high combat value; these vehicles can also be used against surface targets.

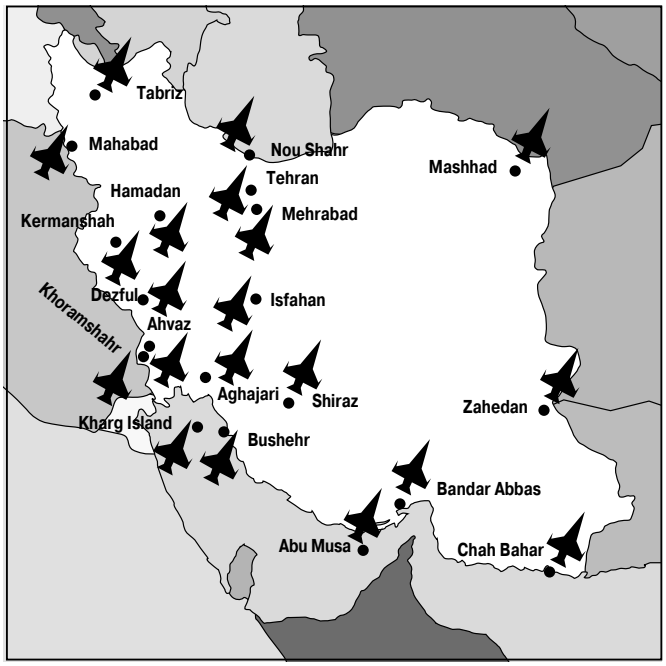
The *F.1 EQ-2* and *-4* modifications of the *Mirage F-1* have the greatest value as strike aircraft; they can be refueled in-flight, are equipped with the *Q-5* version of the *Cyrano-IV* radar, and can launch *AM.39 Exocet* anti-ship missiles. In all, 24 were flown to Iran, of which one was apparently lost in 2001.[77] These planes are theoretically capable of launching nuclear weapons, but only the *Q-5* modification, of which there are no more than ten, has real combat value as a strike aircraft.

The Iranian air force's main strike plane, the *F-4D/E Phantom II,* of which it has about 60-66 with about 30 in a combat ready state, is also worth noting.[78] Although the *F-4* was used as a strike plane by the Iranians in the Iran-Iraq war, and is considered to be the main airborne delivery vehicle developed by the Iranians, the aircraft, the most recent of which was delivered in 1977, cannot be viewed as an effective and prospective delivery vehicle, although its load capacity, range, and the relatively large number of *F-4s* make it theoretically possible to imagine its use as a nuclear weapons delivery system.

The *Su-24MK,* an airplane specially constructed to strike surface targets, has the greatest potential in this regard. Most of the aircraft of this type were obtained from Iran in an unusual way: during Desert Storm in 1991, when multinational forces were operating in Iraq, Iraq's air force transferred some of its most modern airplanes to neighboring Iran in order to avoid their destruction. It is remarkable that during this operation, not one of the 24 Iraqi *Su-24MK* that participated was hit. After the end of the war, Iran refused to return the airplanes to its former enemy. According to Western estimates, there are 24 *Su-24s* in Iran's air force, including those purchased in the Soviet Union and requisitioned from the Iraqis (in total, Iran had at most 22 Iraqi *Su-24MK* and 12 *Su-24MK* received directly from the Soviet Union).[79] These aircraft are in 72 squadrons based at the air station in Shiraz.[80]

The condition of the aircraft that remain in Iran is unknown. However, several experts believe that the aircraft could be brought back into a combat-ready state through the purchase of the necessary spare parts on the "black market."[81] It has been noted as well that the "Su-24MK could be an effective nuclear weapons delivery vehicle, which Westerners believe is being developed by Iran. The Su-24MK aircraft can be adapted for this purpose by domestic industry."[82]

Figure 2. **Iranian Air Bases**



Source: "Air Force, Iran," *Jane's Sentinel Security Assessment—The Gulf States*, November 22, 2004.

However, this picture is seriously altered by the portion of aircraft that are not combat-ready, in particular the *Su-24*, the state of which is not clear. If Iran succeeds in undertaking at least a major overhaul of the aircraft that were produced at the latest in the end of the 1980s, or at best the general modernization of their targeting systems, avionics and signals jamming equipment of the *Su-24* first and foremost, as well as the equipping of these planes with in-flight refueling systems, Iran will obtain a highly mobile, and therefore less vulnerable, delivery vehicle. Furthermore, it will be significantly more accurate than existing and prospective ballistic missiles.

Some sources also say that Iran acquired long-range *Tu-22M3* bombers from Russia or Ukraine.[83] One even finds the number of "Iranian" *Tu-22M* that were ordered: 12 units.[84] There are also reports that Iran "is seen as a potential purchaser" of *Tu-22M*.[85] However, it would seem that the actual implementation of any such initiative is quite far away. The Ukrainian *Tu-22M* are being destroyed in accordance with the bilateral U.S.-Ukrainian "Agreement Between the United States and Ukraine Concerning Assistance to Ukraine in the Elimination of Strategic Nuclear Arms and the Prevention of Proliferation of Weapons of Mass Destruction" signed on November 25, 1993. Of course, work only began in November 2002, but according to the agreement, by early 2005 17 *Tu22M2* and 14 *Tu-22M3* were to have been destroyed, and the Ukrainian air force would only have 20 aircraft, all in the 185th Heavy Bomber Regiment.[86] It should be noted that when the Soviet Union collapsed, there were about 100 *Tu-22M2/M3* remaining on Ukrainian territory.[87] In 1999, there were just 55 airplanes of this type in the Ukrainian air force.[88] Thus, theoretically, some of the 40 bombers that "disappeared" could have ended up in Iran, but the airplane is too large to be transferred to Iran unnoticed, in addition to which it is highly likely that the potential WMD delivery vehicles on the territory of CIS states have been under close U.S. attention; the

Americans would take the appropriate steps if there were an attempt to transfer the *Tu-22M* to Iran.

The "Russian trail" also seems fairly implausible. The example of the long negotiations between Russia and India over the lease of several *Tu-22M*, which never reached the final stages, testifies to this. The same thing happened with the prospective lease/sale of *Tu-22M* to China. In any case, a possible deal to transfer *Tu-22M* to Iran is not likely to happen before there is a similar deal with India.

It is theoretically impossible to deny the Iranian interest in this sort of system. After all, during the Iran-Iraq war Iraqi *Tu-22B* (the precursor of the *Tu-22M*) were actively used against Iranian targets, primarily in bombing Tehran, Isfahan, and Shiraz. However, along with the undoubted merits of long-range bombers, their deficiencies also became clear to the Iranians: the existence of just one airbase made the Iraqi *Tu-22B* very vulnerable to airborne attack which, as noted earlier, forced Baghdad to transfer its aircraft onto the territory of Saudi Arabia and North Yemen.[89] Consequently, if Iran were to acquire similar aircraft it would need to expand its airfield network and strengthen the airfields' air defense systems, making this system less attractive in terms of cost-effectiveness. Moreover, the prospects of even the *Tu22M3* in hypothetical strikes on targets in Israel or on U.S. bases in the Middle East are illusory, given the strong air defense systems and insignificant number of operational aircraft, as well as the absence of support systems (intelligence services, signals jamming equipment, etc.)[90] And the use of this sort of system to deliver free-falling bombs (including nuclear weapons) against other states in the region would seem to be superfluous.

On the whole, looking back at the story of the "Iranian" *Tu-22*, it would seem to be directed not so much against Iran as against Russia. It is quite possible that the entire uproar was due to U.S. fears of the possible "spread" of this powerful system from former Soviet states. In addition, this situation could also be used to prevent the export of *Tu-22Ms* from Russia to India (negotiations on supplying two to four to India have continued without success since the mid-1990s) or to China.

SEA-BASED DELIVERY VEHICLES

It is quite clear that the Iranian navy does not have the capability to deliver WMD to a target. This is due both to its lack of WMD delivery vehicles—such as missile cruisers, cruise or ballistic missile submarines (SSGNs and SSBNs), or navy fighter planes—and to the general obsolescence of the vehicles in the fleet that could potentially be capable of delivering this sort of weaponry. The only potential delivery system are the three Russian-built Project *877EKM* (NATO name *Kilo*-class) diesel submarines *Tariq, Nuur,* and *Yunez*. They are relatively new ships (commissioned by the Iranian navy in 1992, 1993, and 1996) that have a decreased noise level so that it is relatively difficult to detect them—an important factor for a potential WMD carrier. In their present configuration, boats of this type only have torpedoes and it is impossible to launch missiles, including anti-ship cruise missiles, from them. However, these boats can be modernized when they receive intermediate overhauls, to make possible the launch of the *Club/3M54* missile complex, which makes it possible to launch not just anti-ship cruise missiles, but also surface-to-surface *3M14* missiles. According to Western reports, there were plans to equip a submarine with either Chinese *YJ-1* or Russian *Alfa* anti-ship cruise missiles (currently known under the export name *Club*).[91]

Modernization of Iranian submarines along the lines of the Indian submarines of the same type, with the installation of the *Club* missile complex, would appear to be the most realistic and logical way to proceed. This has been indirectly confirmed by media reports that Iran is interested in having its three submarine equipped with this complex.[92] The *3M14* missile can be used to strike ground-based targets. The missile's range is 300 km. It uses an inertial guidance system with corrections from the GPS/GLONASS navigational system.[93] Of course, available evi-

dence suggests that the *3M14* missile has yet to enter series production, and there is no talk yet of equipping ships or submarines with them.[94]

This assumption was indirectly confirmed in July 2005 when Russia's Rosoboronexport and Iran conducted negotiations on the repair and modernization of Iranian submarines at the Second International Naval Salon in St. Petersburg. Analysts believe that each boat will have certain equipment replaced, and a *Club-S* anti-ship cruise missile system will be installed. There will be a separate contract signed for the modernization of each submarine, which will cost an estimated $80-90 million apiece. Initially it was thought that this work would be conducted at Zvezdochka Shipyard in Severodvinsk, but St. Petersburg's Admiralty Shipyard, which had originally built the three diesel submarines for Iran, also competed for the contract.[95] It seems that Zvezdochka probably won the contract, since in April 2006 there was an announcement that experts from this yard visited Iran's shipyard in Bender Abbas, where they familiarized themselves with "the possibilities for conducting an intermediate overhaul on a Project 877EKM diesel-electric submarine."[96]

It is quite likely that some work has been carried out on the submarines: in August 2006 Iranian television showed video clips of the underwater launch of Iran's new *Thaqeb* missiles. However, Western analysts have cast doubt on the validity of these clips.[97] Nonetheless, the very fact of such an action by the Iranians indicates that Iran views its diesel submarines as a missile carrier.

The cost of modernizing all three boats in this manner, though, could be a significant burden on the Iranian navy's budget. It is therefore unlikely that all three boats would be modernized simultaneously.

SO WHY DOES IRAN NEED MISSILES AND WHAT DOES THIS MEAN FOR RUSSIA?

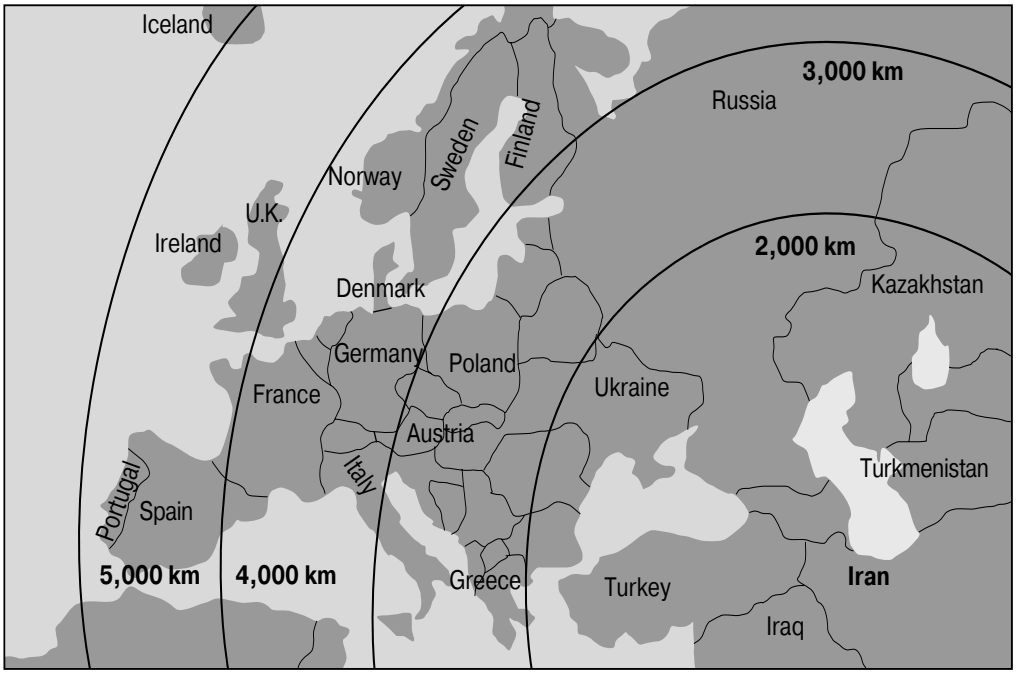
At present, the main and most likely means of delivery for a potential Iranian nuclear weapon is the *Shahab*. This is due to the fact that at present ballistic missiles are the only type of long-range weapon against which a country can not build a defense that guarantees its protection. Ballistic missiles' ability to ensure that its warhead is delivered to a target makes this class of weapon quite attractive to regional powers. Iran is no exception here.

Iran has succeeded in establishing a diverse arsenal of tactical and intermediate-range missiles that give Iran's leaders significant decisionmaking flexibility. As was noted above, the "long arm" of the Islamic state can only be exercised today via the *Shahab* missile. It can simultaneously lift several hundred tons of explosive and, possibly, WMD, and bring it down on an enemy up to 1,500 km away from Iran's borders. The *Shahab's* range makes it possible to cover:

- ❑ Targets within 300 km: Baghdad, Kuwait, Bahrain, and Qatar;
- ❑ 600 km: western parts of Iraq and southern Turkey;
- ❑ 1,000 km: Riyadh, Damascus, Amman, and Kabul;
- ❑ 1,200 km: Tel Aviv, Ankara;
- ❑ 1,500 km: Cairo, Delhi, Mumbai;
- ❑ 2,000 km: Kiev, Moscow, Athens;
- ❑ 3,000 km: Berlin, Rome.

However, these numbers indicate the maximum casualty radius, if calculating from Iran's borders, which is improbably given the increased vulnerabilities launchers would face there. If one assumes that the launches will come from internal parts of the country, then a ballistic missile with a range of 800 km can strike the whole of Iraq; one with a range of 1,000 km can hit the states of the Persian Gulf, southern Turkey, Afghanistan, Jordan, and Syria; 1,500 km includes Israel and Turkey; and 2,000 km Egypt and western India.

Figure 3. **Range of Missiles Launched from Northeastern Iran**



The missile arsenal Iran has today allows it to check nearly the entire Middle Eastern region, including Israel, Central Asia, and Turkey, which would appear to be enough to deter Israel in particular, as well as to threaten U.S. bases in the region (in Iraq, Afghanistan, Qatar, and Saudi Arabia).

However, the missiles' lack of high-tech features makes it impossible to count on destroying pinpoint targets, and instead to its use as a weapon of fear against civilian targets and large areas, such as large bases, storage facilities, and cities, while large-scale use would make it possible to "trample" even Israeli anti-missile defense or U.S. theater missile defense. However, there do not appear to be a large number of *Shahab-3* missiles that can reach Israel, which theoretically increases the chance of missile defense systems destroying all of their targets.

Another important shortcoming of Iran's liquid fuel missiles is the relatively long preparatory period needed to service them before launch (one-two hours), which increases the vulnerability of the missiles and slows down reaction time. It was apparently the realization of this fact that led to the initiation of alternative, solid-fuel missile programs based on Chinese technologies.

Furthermore, it seems that the North Korean reserves and assistance, used to iron out production of the *Shahab-1, Shahab-2,* and *Shahab-3*, are becoming exhausted, since the Korean technology, to the best of our knowledge, does not allow for a qualitative leap in areas such as increasing accuracy and range. Cooperation with China in these areas would not seem irrational.

The reasoning behind the Iranian missile program is quite interesting. Tehran has succeeded in creating and initiating series production of various missile types, making it possible to use them "step-by-step," depending on the degree to which a potential conflict has escalated, and not employ the *Shahab* missiles, which are expensive and of which there are not many, when it is not justifiable.

Further, if Iran succeeds in developing missile production on its territory, it may become a new global supplier of inexpensive missile technologies as well as of the missiles themselves. Iran's role in this regard may grow if it takes "decisive measures" towards North Korea and/or the unification of the two Koreas. In future, Iran could certainly become the regional supplier of missiles for states in the Middle East and Africa. The first indication of this could be the unconfirmed report of the delivery of ballistic missiles from Iran to Sudan in 1996, though it has been refuted by both countries.[98]

The recent conflict in Lebanon is a telling example of the use of mobile launchers: a significant number of unguided solid-fuel missiles of varying ranges were launched against Israel. The large-scale use of these weapons had a strategic effect, since the normal functioning of Israeli border regions was evidently paralyzed. According to official sources, in 33 days of combat Hezbollah's missile brigades launched 3,970 missiles, killing 41 innocent civilians.[99] The intensity of the strikes on average comprised about 120 missiles per day. Moreover, it became clear that the launchers practically could not be destroyed from the air, and it was quite complicated to "catch" them during ground operations. In all, according to official Israeli data, 126 launchers were destroyed.[100]

According to Israeli sources, the Hezbollah arsenal includes the following unguided missiles produced in Iran: *Falak-1, -2* (with ranges of 10 and 11 km, respectively), *Fadjr-3* and *Fadjr-5* (with ranges of 43 and 75 km, respectively), *Nazit-6* (90 km), *Zelzal-1* (150 km), and *Zelzal-2* (400 km).[101] The latter, as far as can be judged, had not been used in combat, though were the *Zelzal-2* to be launched from Hezbollah-controlled territory in Lebanon it would reach practically all of Israel. In fact, though, the *Falak* and *Fadjr* missiles were used in bulk. Their warheads vary from 50 kg (*Falak-1*) to 90 kg (*Falak-2* and *Fadjr-5*). In other words, on average 8.4 tons of explosives fell on Israel each day, comparable to the total mass of the 8-12 *Shahab-1-3* warheads.

Clearly were more powerful missiles like the *Nazeat* (with a 240-430 kg explosive charge, depending on the version of the missile) or *Zelzal* (600 kg warhead) to be employed, this number would increase considerably.

Thus, Iran already possesses what is essentially a *substrategic* weapon to use against Israel. However, this requires maintaining control of the borderlands near Israeli territory, making southern Lebanon analogous to Cuba when intermediate-range Soviet missiles were based there. Thus an expansion of the "security zone" under the control of U.N. forces or Israeli forces will decrease the effectiveness of most of the light Iranian projectiles; however, to balance the threat of heavier systems with greater ranges the occupation of a significant part of Lebanon would be needed, which is not acceptable to the international community.

In addition, the presence of Iranian tactical missiles in Lebanon makes the following scenario possible. If there is a confrontation with Israel, the large-scale use of long-range projectiles* and shorter-range intermediate-range missiles (SRINF) from Lebanese territory against well-known air defense weapons and Israeli air defense could lead to the mass use of *Shahab-3* ballistic missiles against strategic targets and facilities. If this were to happen, the ability of Israeli air defense to intercept all of the missiles is unclear.

Finally, the changed circumstances in Iraq should also be noted. It appears that in 2003-04 there was a sharp decrease in the Iranian missile program's development of new long-range missiles. Probably the Iranian missile industry was concentrating on improving the *Shahab-3* missiles in terms of accuracy, reliability, and operational characteristics. As a result of the U.S. invasion of Iraq, U.S. troops themselves have come very close to Iran's borders, putting them in the range of many Iranian tactical missiles. Thus, there are currently about 12 large permanent U.S. bases in Iraq that are located practically in a straight line through the country's central regions.[102] In total, there are about 130,000 U.S. troops in Iraq today, the majority of whom are carrying out operations in the Shi'ite parts of the country that border Iran and are therefore within the range of Iranian "substrategic" missiles. It is possible that Iran might provoke an armed conflict in the Iraqi borderlands, among other things, to "draw in" U.S. troops, bringing them within reach of less long-range systems.

Under this scenario, the U.S. contingent would become a virtual hostage to U.S.-Iranian relations and far more vulnerable than U.S. bases in the Persian Gulf region and U.S. territory itself. Further, those who would be hit by Iran's tactical missiles would be military servicemen, making it possible to avoid blame for striking innocent civilians in the case of a strike. Accordingly, fairly simple and cheap systems could be used to strike the United States, making it possible for Iran to concentrate on enhancing *Shahab-3* missiles and gradually improving its characteristics. This hypothesis fits well into the basic postulates of Iranian military doctrine: deterring possible aggression by causing a potential aggressor to pay the maximum possible price for its actions.[103]

Iran's experience testifies to the fact that the mass use of ballistic missiles against civilian targets does not lead to the desired effect, while the large-scale use of missiles in today's world is extremely expensive (according to some sources at the end of the "war of the cities" Iran was left with just 20 *SCUD-B* missiles).

Hence, it logically follows that Iran's missile arsenal today, when conventionally equipped, is chiefly for use as part of a fear tactic, aimed primarily against civilians or a potential enemy's large military facilities. In order to increase its effectiveness there must be investment in the modernization of existing missiles, firstly in increasing accuracy and secondly, and to a lesser extent, in increasing range, which is very expensive in terms of both time and money. One cannot exclude the possibility of a compromise solution, where the missiles' "bludgeon" is augmented by the "foil" of aircraft; the only candidate for such a role in the Iranian air force is the *Su-24*. However, in this case Iran would have to expend significant funds not so much for modernization, as for simply performing routine repairs on the aircraft. But if this were done, Iran's arsenal would then have a substrategic means of WMD delivery with increased accuracy, and if in-flight refueling capabilities were added (like those on the Soviet/Russian *Su-24M*) then the range would increase still further.[104]

The prospects for intermediate-range missiles, strategic cruise missiles, and long-range bombers appear quite distant, primarily due to the significant costs of such systems, as well as the completely different technological level required for their development, production, and use. All things considered, it appears that promising R&D on this sort of system is being undertaken (primarily on cruise missiles and intermediate-range ballistic missiles); the Iranian arsenal may even come to include such high-tech systems as the Russian strategic *Kh-55* cruise missile.[105] From time to time there are reports of Iran's development of a space delivery system; however, practical results have not been achieved to date, which is indirectly indicated by the contract signed with Russia in early 2005 to launch an Iranian satellite.

Moreover, we are not talking about the possible presence of *Tu-22M* long-range bombers in Iran. The appearance of this sort of equipment in Iran would not go unnoticed, and there is not even a theoretical possibility that they could have been obtained from Ukraine, to say nothing of Russia.[106] Given the enormous cost of operating this type of equipment, it would seem that Iran simply does not need them, if judged on the basis of cost effectiveness.

Thus, Iran's only practical means of WMD delivery is the *Shahab*, of which the most recent modification, the *Shahab-3* poses the greatest threat. It is important to realize that Iran has broad experience in the operation of this type of missile; they were mastered by Islamic Revolutionary Guard units and apparently have been cured of all of the "children's ailments" faced by the *Shahab-1* and *-2*. It would seem that these are likely to be replaced by the *Shahab-3* ballistic missile in the near future as well as, most likely, solid-fuel missiles.

In analyzing potential delivery systems, one must consider not just the existence of one system or another in arsenals or even in series production, but also the system's ability to lift and deliver a nuclear charge to a target. It is nearly impossible to estimate the mass and dimensions of an Iranian nuclear warhead, but several Western analysts have surmised that they are to a large extent based on Chinese projects obtained through the A.Q. Khan network, and likely weigh 1-2,000 pounds (450-900 kg).[107] At present this weight can be carried by the Iranian delivery systems noted in Table 2.

Table 2. **Means for the Delivery of Nuclear Weapons Capable of Carrying Warheads Weighing at Least 500 kg.**

Name	Range, km Min.-Max.	Weight, kg missile	Weight, kg warhead	CEP, m	Engine type
		Solid fuel Ballistic Missiles			
Zelzal-2	350–400	No information	600	No information	Solid fuel engine
		Liquid Fuel Ballistic Missiles			
Shahab-1 (*SCUD-B*)	50–300	5,862	989	450–1,000	Liquid fuel engine
Shahab-2 (*SCUD-C*)	55–700	6,400	700	1,000	Liquid fuel engine
Shahab-3 (*Zelzal-3*)	1,300–1,500	16,000	760-1,100	1,000	Liquid fuel engine
Shahab-4	1,800–2,000	22,000	750–1,000	No information	Liquid fuel engine
		Cruise Missiles			
CSSC-2	85	2,300	400		turboprop
CSSC-3	95	3,000	513		turboprop
Raad	150–400	No information	500		
		Bombers			
Su-24MK	950 km with a payload totaling 2,500 kg 1,050 km with a payload totaling 3,000 kg and two auxiliary tanks		Maximum weight of individual bomb: 1,500 kg		

Thus, we see that at present there are two types of ballistic missiles and front-line *Su-24MK* bombers that could be considered substrategic nuclear weapons delivery vehicles, if Iranian physicists are able to decrease the size of potential nuclear charges and ensure that their weight is no more than 1,000 kg. If the mass of the nuclear charges can be further decreased, then the spectrum of means of delivery is considerably increased. However, this would seem to be likely only in the very distant future; that is, only the *Su-24MK* and *Shahab-2* and *Shahab-3* can be considered realistic delivery vehicles at this point in time. Moreover, the bombers could be used for pinpoint strikes, while the ballistic missiles would be used as a means to frighten and deter primarily neighboring Arab states and Israel with the possible use of WMD. The basic question remains: how capable is Iranian technology of creating a warhead suitable for use on a ballistic missile, in terms of mass and dimensions? One should remember that in the recognized nuclear weapon states, the first nuclear delivery systems were bombers. It is difficult to assess the cases of Israel, India, and Pakistan, since there is no detailed information on their nuclear warheads, but it is impossible to completely exclude the possibility that they have placed their warheads on missiles.

Iran's missile program does not threaten Russia at present. It would seem that Iran was never the target of Soviet/Russian strategic nuclear forces (like North Korea, which has a substantially more advanced missile program while that nation shares a border with Russia).[108] If Iran obtains nuclear weapons and intermediate-range missiles, it would seem that the main deterrent force will nonetheless primarily be airborne delivery systems: strategic and long-range aviation as well as the *Su-24M, M2 and Su-34* tactical bombers.

CONCLUSION

It follows from the above analysis that Iran's missile and nuclear programs are not synchronized. Iran's missile program is developing according to its own internal logic. The "intersection" of the nuclear and missile programs, of course, is possible—not at present, but in the future, and of course only if Iran is really striving to obtain a nuclear bomb (which is not the subject of this article)

Given the complex negotiations on the Iranian nuclear program, the combination of these two issues could considerably harden the Iranian position and is therefore not advisable.

Notes

[1] The research for this paper was conducted as part of a project funded by the U.S. Institute of Peace.

[2] Duncan Lennox, "Iran's ballistic missile projects: uncovering the evidence," *Jane's Intelligence Review,* June 1, 1998.

[3] "Iran's war of the cities' experience," *Ballistic Missile Proliferation*, March 2000.

[4] Ibid.

[5] Duncan Lennox, op. cit.

[6] Data cited from "Free Rocket Over Ground (FROG) artillery rocket system (Luna-M)," *Jane's Armour and Artillery,* January 21, 2004; "SS-1 'Scud' (R-11/8A61/8K11, R-11FM (SS-N-1B) and R-17/8K14)," *Jane's Strategic Weapon Systems*, July 28, 2004; "SS-21 'Scarab' (OTR21/9M79 Tochka)," *Jane's Strategic Weapon Systems*, July 28, 2004.

[7] Yu. Nenakhov, *The "Miracle weapons" of the Third Reich* (Minsk: Harvest, 1999), p. 575.

[8] "Iran's war of the cities' experience," op. cit.

[9] Ibid.

[10] Ibid.

[11] Robin Hughes, "Iran's ballistic missile developments—long-range ambitions," *Jane's Defense Weekly*, September 13, 2006.

[12] "Iran's war of the cities' experience," op. cit.

[13] Duncan Lennox, op. cit.

[14] The majority of Iran's military industrial facilities and densely populated regions are within 400 km of the Iran-Iraq border, and thus within range of Iraqi-built *SCUD* and *Al-Hussein* missiles.

[15] "Procurement, Iran," *Jane's Sentinel Security Assessment—The Gulf States,"* November 24, 2004.

[16] Ibid.

[17] Robin Hughes, op.cit.

[18] "'SCUD-B' variants," *Jane's Strategic Weapons Systems*, June 15,2004.

[19] "Offensive Weapons—Unclassified Projects, Iran," *Jane's Strategic Weapons Systems*, January 26, 2005.

[20] "'SCUD-C' variant (Hwasong 6) and 'SCUD-D' variants (Hwasong 7)," *Jane's Strategic Weapons Systems*, June 15, 2004.

[21] "Offensive Weapons—Unclassified Projects, Iran," op. cit.

[22] "'SCUD-C' variant (Hwasong 6) and 'SCUD-D' variants (Hwasong 7)," op. cit.

[23] Ed Blanche Ed, "Iran claims missile self-sufficiency," *Jane's Missile and Rockets*, January 1, 1999.

[24] "Procurement, Iran," op. cit.

[25] Paul Beaver, "Iran's Shahab 3 IRBM 'ready for production,'" *Jane's Missiles and Rockets*, June 1, 1998.

[26] Ibid.

[27] "Shahab 3/4," *Jane's Strategic Weapon Systems*, June 15, 2004.

[28] Ibid.

[29] Ibid.

[30] Ed Blanche, "Iran puts Shahab 3 into service," *Jane's Missiles and Rockets*, September 1, 2003.

[31] Ed Blanche, "Iran forms five units for Shahab ballistic missiles," *Jane's Defense Weekly*, July 12, 2000.

[32] Ed Blanche, "Shahab 3 ready for service, says Iran," *Jane's Missiles and Rockets*, August 1, 2003.

[33] Ibid.

[34] http://www.waronline.org/mideast/iran_wmd.htm.

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[40] "Iranian Ministry of Defense head announced that recent test of Shahab-3 missile is of an exclusively defensive nature," *RIA Novosti*, June 8, 2005.

[41] Ed Blanche, "Iran claims Shahab 3 range now 2000 km," *Jane's Missiles and Rockets*, November 1, 2004.

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[43] Alon Ben-David, "Iran tests solid-fuel engine for Shahab 3," *Jane's Defense Weekly*, June 8, 2005.

[44] "Why Iran fired Scuds at Iraq," *Foreign Report*, June 28, 2001.

[45] Duncan Lennox, *Jane's Defense Weekly*, September 8, 1999.

[46] Andrew Rathmell, "Iran's missiles come under fire," *Jane's Intelligence Review*, December 1, 1997.

[47] Ed Blanche, "Iran enhances existing weaponry by optimizing Shahab 3 ballistic missile," *Jane's Missiles and Rockets*, February 1, 2004.

[48] Ibid.

[49] Ed Blanche, "Iran forms five units for Shahab ballistic missiles," *Jane's Defense Weekly*, July 12, 2000.

[50] "Iranian Ministry of Defense head announced that recent test of Shahab-3 missile is of an exclusively defensive nature," op. cit.

[51] "Fateh A-110," *Jane's Strategic Weapons Systems*, June 15, 2004.

[52] "Procurement, Iran," op. cit.

[53] Duncan Lennox, "Short-range Iranian ballistic missile on view," *Jane's Defense Weekly*, February 5, 2003.

[54] Ibid.

[55] "Offensive Weapons—Unclassified Projects, Iran," *Jane's Strategic Weapons Systems*, January 26, 2005.

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[57] Ibid.

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[59] "Iran conducts tests of new tactical missile," *Jane's Missiles and Rockets*, October 1, 2006.

[60] "Iran's unconventional weapons and missiles," <http://www.waronline.org/mideast/iran_wmd.htm>.

[61] Dmitri Fomin, "The hunt for 'Scuds'," *Voyenno-promyshlennyy kur'er* (Military Industry Courier), December 14-20, 2005.

[62] Ibid.

[63] Ibid.

[64] Harold Hough, "Iran targets the Arabian Peninsula," *Jane's Intelligence Review*, October 1, 1996.

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[67] "'Tzakhal' destroyed Iranian launchers in 34 minutes," <http://www.pwgs.orgnews/25-10-2006.htm>, news from October 25, 2006. AAA PWG SYSTEMS, last accessed April 20, 2007.

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[69] Ibid.

[70] Ibid.

[71] "Glad to try," *Kommersant*, February 3, 2005.

[72] Viktor Markovskii and Konstantin Perov, "Aviation cruise missiles," *Aviation and Cosmonautics*, No. 9, 2005, p. 55.

[73] "NCRI: New Accusations against Iranian missileer," *IranAtom.Ru*, <http://www.iranatom.ru/news/aeoi/year05/august/x55.htm>, last accessed April 20, 2007.

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[75] Markovskii and Perov, "Aviation cruise missiles," op. cit., p. 53.

[76] Ibid.

[77] "IRIAF since 1998. Dassault Mirage F.1EQ in service with the IRIAF," Arabian Peninsula & Persian Gulf Database, < http://www.acig.org/artman/publish/printer_219. shtml>, last accessed April 20, 2004.

[78] "Iran's military aviation and air defense forces," *War Online*, <http://www.waronline.org/mideast/iran_airforce.htm>, last accessed April 20, 2004.

[79] "Air Force, Iran," *Jane's Sentinel Security Assessment—The Gulf States*, November 22, 2004.

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[81] Sergei Moroz and Igor Prikhodchenko, op. cit., p. 37.

[82] Ibid.

[83] "Air Force, Iran," op. cit.

[84] "Procurement, Iran," op. cit.

[85] "The Russian Air Force's Combat Aircraft," *Aviation and Cosmonautics*, No. 8, 1999, p. 4.

[86] Valerii Romanchenko, "Panorama," *Aviation and the Times,* No. 6, 2002, p. 22.

[87] Estimated from data in A.G. Lenskii and M.M. Tsybin, *Voyennaya aviatsiya Otechestva. Organizatsiya, vooruzheniye, dislokatsiya (1992/2000 gg.)* (Our National Military Aviation: organization, armaments, and locations, 1992-2000) (St. Petersburg, 2004).

[88] "The Russian Air Force's Combat Aircraft," op. cit.

[89] Ibid.

[90] One should remember that according to available information, the talks with India on the lease of the Tu-22M3 involve two to four aircraft, which they plan to use at sea as anti-ship cruise missile carriers as well as long-range reconnaissance aircraft.

[91] "Submarines, Iran. Kilo class (Project 877 EKM) (SSC)," *Jane's Fighting Ships*, February 17, 2005.

[92] "Procurement, Iran," op. cit.

[93] "SS-N-27 (3M14/3M54/91R1/91R2 Club)," *Jane's Strategic Weapon Systems*, July 24, 2004.

[94] Ibid.

[95] Ibid.

[96] Andrei Frolov, "The Zvezdochka Machine Building Plant," *Eksport vooruzhenii* (Arms Exports), No.4, 2006, p. 54.

[97] "US scoffs at Iranian sub-launched missile 'test'," *Jane's Missiles and Rockets*, November 1, 2006.

[98] "Shahab 1 (SS-1C ''Scud B' variant)," *Jane's Strategic Weapon Systems*, June 23, 2006.

[99] Official Israeli data as cited in: Alon Ben-David, "Israel introspective after Lebanon offensive," *Jane's Defense Weekly*, August 23, 2006.

[100] Sergei Vey, "Israel after the Lebanese offensive," *Army Guide*, September 26, 2006. <http://www.army-guide.com/rus/article/article.php?forumID=702>, last accessed April 20, 2004.

[101] "Hezbollah as a strategic arm of Iran," Intelligence and Terrorism Information Center at the Center for Special Studies, September 8, 2006.

[102] According to data in: *The Friends Committee on National Legislation*, <http://www.fcnl.org/iraq/bases.htm >, last accessed April 20, 2004.

[103] As cited in Michael Knights, "Iran's conventional forces remain key to deterring potential threats," *Jane's Intelligence Review*, February 1, 2006.

[104] The range with a normal warhead load of 1 ton is 600 km, which can be compared to the range of the *Shahab-2*, which has a 700 kg warhead and maximum error of 1 km. The maximum weapons load of a *Su-24* is 7 tons.

[105] Andrei Chernikov, "Ukraine writes off Soviet missiles for Leonid Kuchma," *Kommersant*, February 19, 2005.

[106] All Belarusian *Tu*-22M were transferred to Russia in the early 1990s.

[107] Michael Knights "US long-range planners focus on containment of a nuclear Iran," *Janes's Intelligence Review*, September 1, 2005.

[108] Viktor Yesin, "That which was blown up was not a military charge," *Moskovskiye novosti*, October 13, 2006.

Graeme P. Herd
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DEBATING RUSSIAN DEMOGRAPHIC SECURITY: CURRENT TRENDS AND FUTURE TRAJECTORIES

President Putin in his annual 2006 address to the Federal Assembly argued that demographic decline was Russia's most acute problem.[1] He also instructed Igor Ivanov, then the secretary of the Security Council, to focus on the three main threats to Russia: "First, technological breakdown problems, the threat of a possible technological breakdown. Second, the threat related to unfavorable demographic developments, and third, the threat in the sphere of national security, defence issues primarily."[2] The importance of the issue as a priority, even amongst other pan-Federation projects, was evidenced by Putin's initiative in June 2006 to rename the *Council on National Projects* to the *Council on National Projects and Demographic Policy* (officially the Council for the Implementation of Priority National Projects and Demographic Policy).[3]

Other elite figures have also noted the demographic crisis through the prism of state security. Putin's representative to the Far Eastern Federal Distinct, Kamil Iskhakov, has stated that for Russia to successfully modernize "we have to stop the outflow of population" as over the last 15 years the population of the Far East has reduced by 20 percent "due to migration and the imbalance of birth and death rates."[4] Vasiliy Smirnov, the deputy head of the General Staff, noted the military-security consequences of demographic decline as the conscript recruitment pool diminishes by 100,000 new recruits each year.[5] Party political representatives have tended, perhaps as befits politicians, to dramatize the demographic crisis, describing it in apocalyptic terms: an "extraordinary demographic crisis" and a "demographic catastrophe." Federation Council Chairman Sergei Mironov, leader of Russia's Party "Fair Russia" (whose platform is based on resolving the demographic crisis), noted that Russia might have only 52 million people by 2080 if urgent measures are not taken. Communist Party of Russia leader Gennady Zyuganov has stated that "the country is losing its population. It has lost 10 million people in 15 years, of whom nine million are Russians. The preservation of the people is such a crying problem that it cannot be avoided."[6] Patriarch Alexei II has also joined this chorus of concern, stating: "We are living in the days where the death of our people has begun."[7]

This article briefly examines the relationship between demographic decline, the associated migration changes within the Russian Federation and how this impacts on Russian stability. It identifies the effects of demographic decline on political processes and socioeconomic conditions in Russia and demonstrates their security implications and consequences. It concludes by proposing policy recommendations to better manage demographic decline by

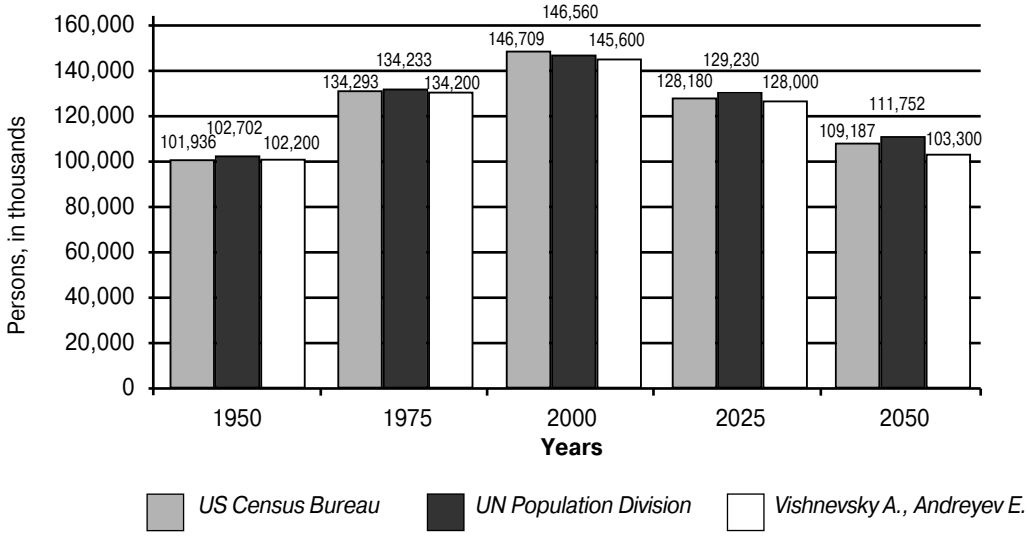
countering the worst effects of the destabilizing security dilemmas that arise within and between the political, economic, and societal security sectors.

DEMOGRAPHIC DYNAMICS

Putin has noted that "profound demographic studies" are not yet being conducted in Russia, even though "we do need this systemic information."[8] The Russian October 2002 census results have confirmed trends already anticipated by many demographers. According to the U.S. census bureau, Russia's population is set to fall annually by 400,000 and thus 10 million by 2025.[9] The UNDP calculates the annual decline at 840,000 or falling by 21 million by 2025, a quarter—or 31 million—by 2050.[10] The Russian population dropped by 4,371,200 between 1992 and 2002—"the natural decline of the population was 7,399,800, a decline of 5 percent from the 1989 to the 2002 census: this figure consisted of 20,540,000 births and 27,939,800 deaths."[11] The Russian population is declining fast, by an estimated 700-750,000 people each year. Between January and July 2006, for example, the Russian population fell by more than 380,000, to 142.4 million.[12] Russia's Economic Development Ministry's socioeconomic development forecast for 2006-2009 reports that by 2009 Russia's population will have fallen to between 140.4 and 140.7 million.[13]

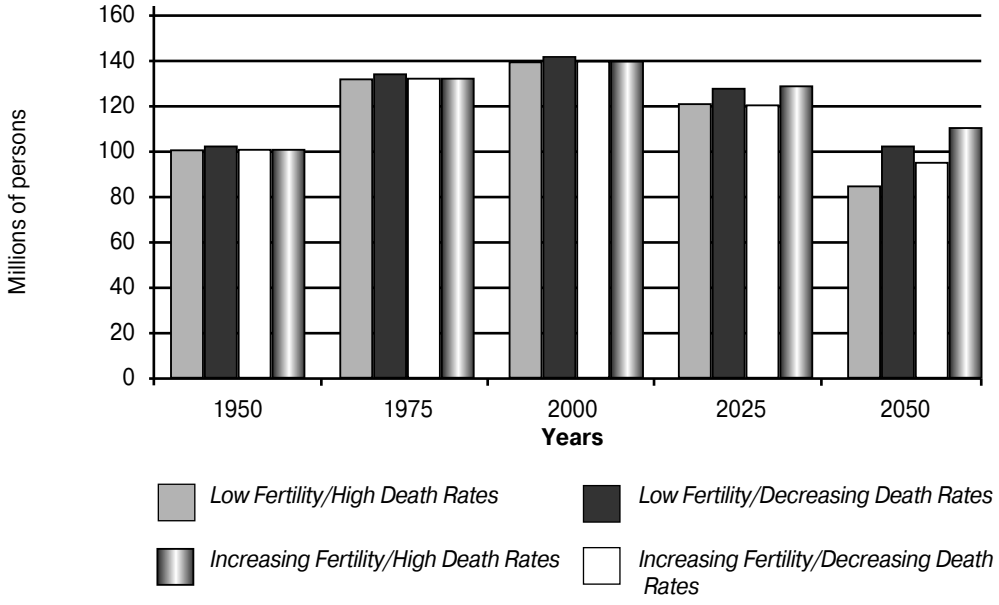
In projecting Russian population levels between 1950 and 2050 (see Figure 1 below), it is interesting to note that although the United States Census Bureau and the United Nations Population Division provide estimates, neither the Federal Service of State Statistics (Rosstat) or, as far as we know, any other official Russian projections for that time period are provided. However, there are a few studies (most of them generally covering the period until 2020) that have been undertaken by Russian specialists. Anatoly Vishnevsky and Evgeny Andreyev, for example, provide a survey and projection from 1950 to 2050.[14] In one calculated projection for 2000-2050 they do not take into account a possible positive migration growth, thereby allowing us to view clearly the impact of migration on Russian demographic trends. Vishnevsky and Andreyev's final figure for total Russian population by 2050 is 103.3 billion (with low fertility and decreasing death rates and zero migration growth), while those of the U.S. Census Bureau and the United Nations are higher by approximately 10 million.[15]

Figure 1. **Population Prospects, 1950–2050**[16]



Vishnevsky and Andreyev (see Figure 2, below) also suggest that only with increasing fertility and falling death rates do their projections approximate those of the United Nations or U.S. Census Bureau estimates.

Figure 2. **Population Projection Given Zero Migration Growth**[17]

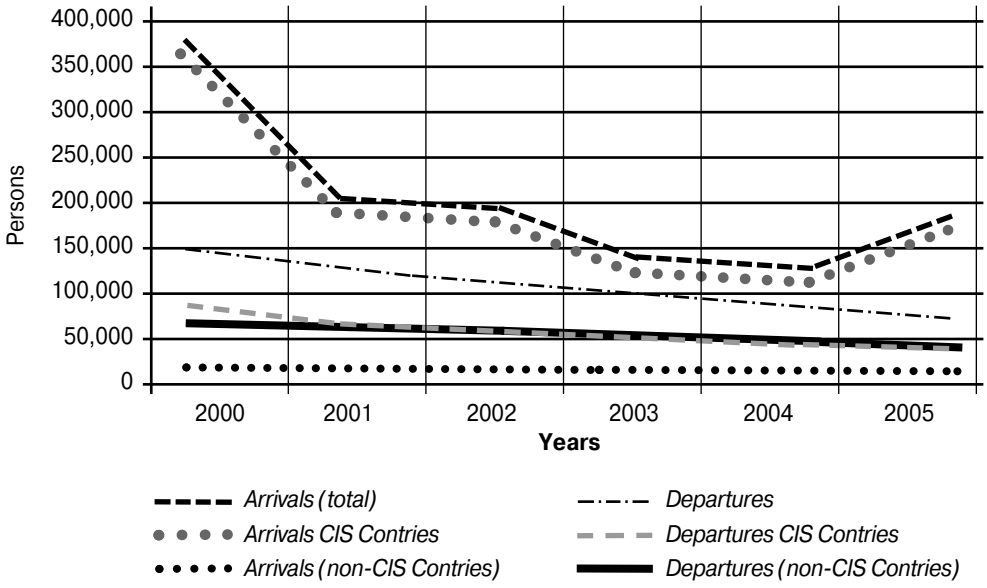


The Center for Demography in Moscow reported 793,000 more deaths than births in 2004. In 2004 the average birth rate in Russia stood at 132 live births per 100 women of child-bearing age (between 15 and 49 years) "and this is insufficient to ensure even the simple reproduction of the population."[18] In 1986-87 the fertility rate was 2.19 births per woman, this fell to 1.17 in 1999 and rose to 1.34 in 2006, but 2.14 births per woman is still needed to allow for the mere reproduction of the population. In 2006 Yekaterina Lakhova, the chair-woman of the State Duma Committee for Women's Affairs, reported that almost half of Russian families are childless: "What's the Russian family like today? It's mainly childless. In almost half of families (out of 41 million families) there aren't any children at all."[19] While birth rates have been consistently falling for more than two decades, a number of longer-term factors, not the least of which is poor health conditions, have brought about an increase in the death rate. Between 1989 and 1994, life expectancy for Russian men fell by more than six years and the gender gap in mortality is startling: by 2006 Russian women were living to 72 years on average, men to just 59 years. If these trends are not reversed or offset by mass immigration, by 2050 the Russian population will have fallen by 50 million, taking it below 100 million.[20]

Migration to Russia of ethnic Russians and Russian-speaking populations from outside the Russian Federation fails to compensate for the natural decrease in the population, though experts and specialists admit that exact figures are lacking.[21] Basic trends are, however, clear. In Figure 3 we can see that there is a marked decrease in the total annual number of arrivals in Russia between 1994, the peak year of immigration, and 2004, with numbers once again on the rise by 2005. This increase is almost exclusively accounted for by immigration from CIS states: the number of arrivals from non-CIS countries is not only very small in absolute numbers but also even this small number is slowly decreasing.

Internal migration in Russia is commonly referred to by specialists as one of "zapadny dreif," that is, "western drift."[22] This metaphor of population shift and redistribution captures a very important new phenomenon, namely the reversal of the 20th century trend of movement from West to East: in the 21st century the movement is from East to West.[23] One of Russia's leading demographers, Zhanna Zayonchkovskaya, notes that "The territorial preferences of the population have divided Russia into two opposite parts: The Southwestern zone of inflow and the Northeastern zone of outflow. The separation cuts through Moscow-St. Petersburg-Kazan."[24] Nikita Mkrcthian provides a more detailed description of internal migration patterns by analyzing internal migration on the federal level (seven federal districts) and the regional level. According to Mkrtchian, since 1991 Russia's population has mainly been moving from the Siberian and Far Eastern Federal Districts to the Central and Western Districts. As Putin noted, "The income of the population in real terms is 85 per cent of the average level in Russia, and the cost of life in the [Siberian Federal] District is higher then the average in Russia..."[25] The Russian Far East, which constitutes 41 percent of Russian territory, lost two million inhabitants over the last 14 years—only six percent of the population live there.[26]

Figure 3. **International Migration to/from the Russian Federation, 2000-05**[27]

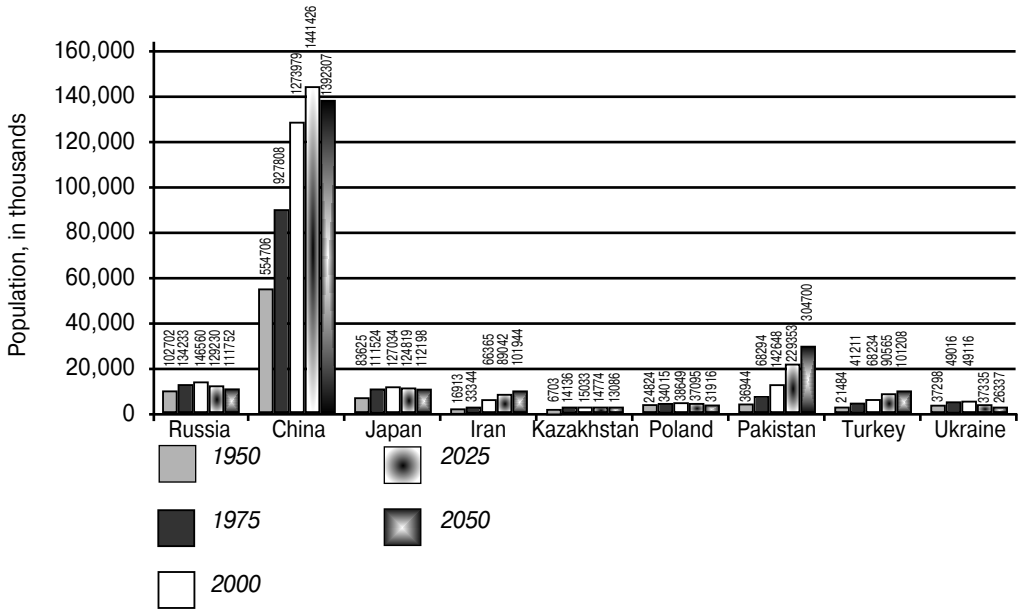


In addition, the internal migration flow from rural to urban settings, differential birth and death rates between different religious and ethnic communities (not least between Slavic regions and "ethnic homelands"), the aging of the population and changing sex balance, as well as the devastation caused by HIV/AIDS, are well understood by the demography community and political geographers. For example, between 1989 and 2002 "only 27 of Russia's 87 regions (excluding Chechnya and Ingushetia) registered more births than deaths. Most were located outside the central core of the country, in the ethnic homelands in the North Caucasus and the various regions of Siberia and the Far East."[28] As Russia is an extremely large and diverse country, we can expect that there will be a regional aspect to almost every socioeconomic, political, and military issue. As Putin went on to note, such trends suggest a "further reduction in the number of population in Siberia and the Far East may lead at the first stage to narrowing of the national economic space, at the second phase—to intensification of creeping ethnic expansion, and at the third [phase] —to a serious potential peril to the integrity of the state."[29]

We should also note Russia's population projections in comparative terms, particularly when key neighbors are used as points of reference. In Figures 4, we observe that a minority of

these selected states are declining and amongst them—Russia, Ukraine, Japan, China, and Poland—Russia's projected decline is steepest. Furthermore, this is occurring in a context where the majority of the states in question are expected to have population increases: Iran, Pakistan, and Turkey. Moreover, although China is expected to decline by 2050, the decline will be slight: from a high of 1.44 billion to 1.39 billion.

Figure 4. **Population Prospects for Selected Countries, 1950-2050**[30]



Political Security Considerations

The demographic decline raises a series of issues concerning the political security and stability of the Russian federal system. These are related not only to potential changes in voter preference, the political weight of constituent parts of the federation, and the viability and sustainability of the current federal architecture, but also to the rise of gender politics and the potential politicization of Islam within Russia. An electoral geography is emerging with certain features. Voter turnout and orientation is partially influenced by the age composition of the regional populations. A left-leaning red belt of regions stretching from the southwest to the southern portions of the country with aging populations (pensioners tend to have high voter turnout) voted for the Communist Party in the 2000 presidential elections and to a lesser extent in 2004: "Putin received more than 80 percent of the vote in 16 regions, all of which were ethnic regions, including Chechnya, Dagestan, and Kabardino-Balkaria, even receiving 98.18 percent in Ingushetia."[31] Since well over 50 percent of the registered voters that comprise the total electorate reside in 20 of the most populous regions, radical changes to the political geography, and hence the political security implications of demographic change for the Russian Federation, are not as important as one might at first suppose for the political geography of the federation. Demographic decline does, however, increase the politico-military security importance of sparsely populated border regions in the eyes of the center. Indeed, the role and significance of the state border increases in significance as global stocks of hydrocarbons, drinking water, and agricultural land diminish and the world's population grows.

Throughout the Yeltsin and Putin presidencies, the Russian state has propagated a civic, not ethnic, national identity project, an effort to build the *Rossiyanin* (a citizen of Russia) not *Russkiy* (ethnic Russian). In fact, it is the conservatives (Communists, Agrarians, and LDPR) who have played the ethno-national card, rather than the executive-backed "parties of power." Nevertheless, it is possible that demographic decline and the gradual consolidation of an eth-

nic Russian population in Russia's European core and the decrease of the proportion of ethnic Russians in non-Russian ethnic republics, especially those where titular nationalities are predominantly Islamic, could increase pressure to recentralize state power and allow "the politics of Putinism" to become more associated with Russian ethnocentrism. The 2002 census illustrated one key trend in Russia's ethnic composition: the continuing decrease in ethnic Russians relative to non-ethnic Russians, down 3.3 percent since the 1989 Soviet census. Figures 5 and 6 note the net statistical dominance of ethnic Russians over the seven other major ethnicities in Russia, but as a percentage of all ethnicities, not just the seven largest, the ethnic Russian population is falling, as we shall note below.

Figure 5. **Ethnic Composition of the Population, 2002 Census**[32]

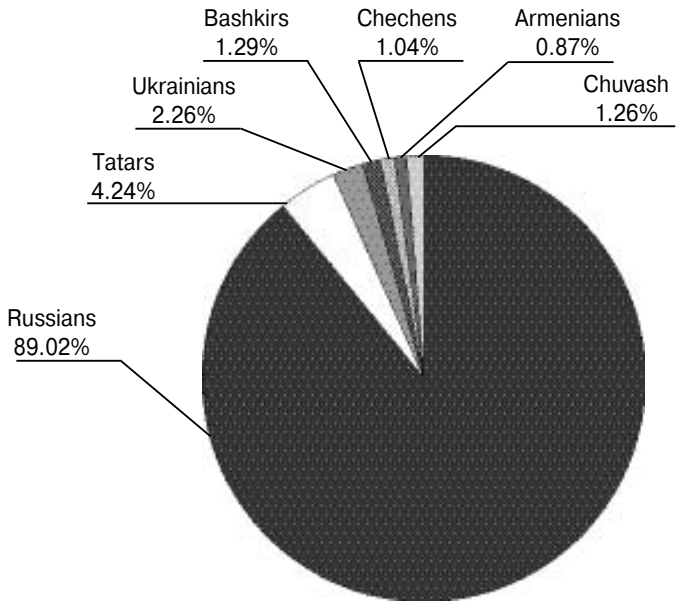
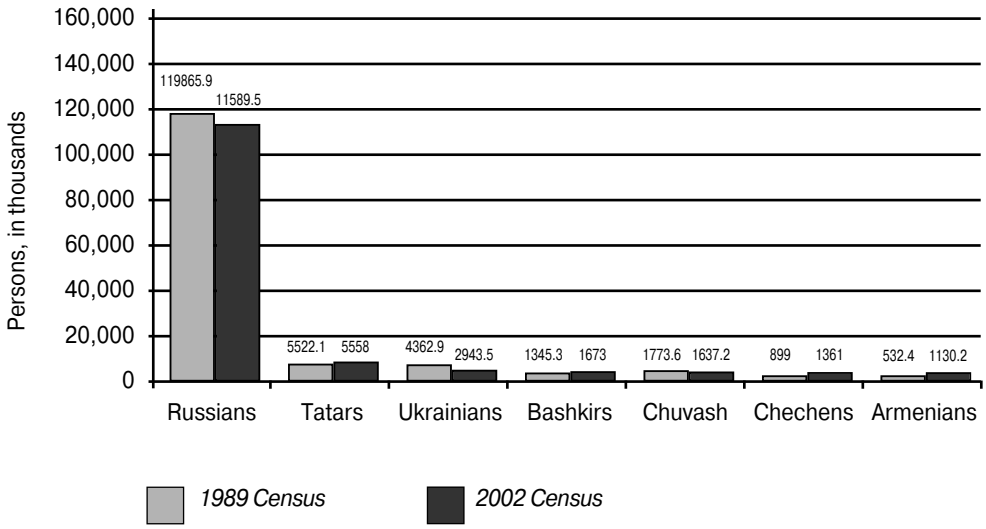
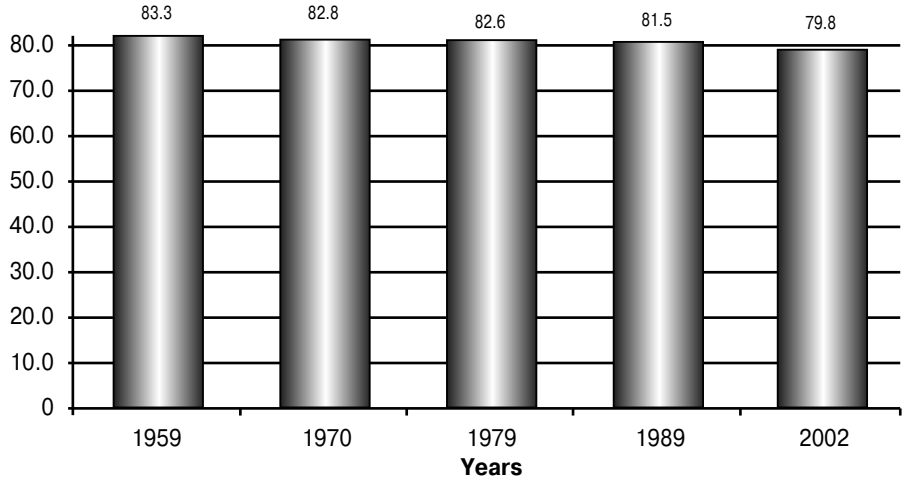


Figure 6. **Russians and the Six Other Largest Ethnic Groups since the 1989 Census**[33]



It should also be noted that the ethnic Russian population, as a percentage of all other citizens within the federation, has been on the decline since 1959 (Figure 7) and the fertility rate of the six biggest non-Russian ethnic groups is higher than that of Russians.

Figure 7. **Percentage of Ethnic Russians in the 1959, 1970,1979, 1989, and 2002 Censuses**[34]



The decline of the Slavic population is even more pronounced when we consider statistics illustrating the fall in the two other major Slavic populations of Russia: Ukrainians (from 4362.9 in 1989 to 2943.5 in 2002) and Belarusians (from 1206.2 in 1989 to 814.7 in 2002).[35]

The 2002 Census reveals that the ethnic Russian population has declined from 81.3 to 79.8 percent of the population of Russia, the lowest since the first Soviet census of 1926.[36] The advent of the second Chechen campaign, the perceived threat of "Islamic terrorism," and the reduction of the sovereignty of Russia's ethnic republics have all provided an environment within which the recentralization of state power has greater legitimacy. Moreover, the adoption of a set of specific policies, namely the creation of the federal district structure, the association of the state with the Orthodox church, and Putin's calls for a national idea based on the "traditional values" of the Russians—patriotism, *gosudarstvennichestvo*, and social solidarity (*sobornost*)—has established a clear link between Putinism and Russian ethnocentrism.[37]

It is interesting to consider the opinion of Putin's former economic adviser, Andrei Illarionov, who has claimed that if new government measures to stimulate birth rates economically and financially are realised, this "will only complete the dissolution of the Russian Empire" because the vast majority of funding will benefit the "national" [ethnic] regions where the birth rates are already higher than for ethnic Russians. According to Illarionov's pessimistic scenario, the increased population of those regions in comparison to the rest of the country could move these regions away from the center and even "out from Russia,"[38]

Although such a pessimistic prediction is somewhat exaggerated, the slow, gradual but constant diminution of ethnic Russians in favor of non-ethnic Russians does not show any sign of reversal. The ethnic decline within Russia's demographic crisis has a particularly important linkage to the migration problem. Most experts agree that Russia cannot resolve the demographic crisis without a large scale immigration policy.[39] According to some, if the current population size is to be maintained through migration; then the descendents of these migrants will make up more than half of the population by the end of the century.[40] Russia will, therefore, be confronted with serious questions that will arise in the near future. What will the Russian ethnic picture look like over the next few decades? Will Russia continue to be the country of Russians or even "for Russians" as nationalist movements claim? How will it affect Russian identity, the nature of the Russian state, interethnic relations, as well as electoral campaigns and results?

Will Russia manage to have a successful cultural and political assimilation of its non-Russian population and immigrants? Will Russia manage to successfully counteract the rise of nationalist and in some cases extremist movements in order to ensure a sustainable immigration policy, vitally important for its demographic situation?

Migration from ethnic republics on the periphery to the European core and differential birth and death rates between Muslim and non-Muslim societies in Russia could create a sense of threat among the majority population—albeit unintended. As Ramil Gainurdin, Chairman of Russia's Council of Muftis notes: "Muslims create big families, they have a lot of children, they don't abandon their children or their parents. So, yes, the Muslim population in Russia will grow. But not to the detriment of Russians."[41] Potentially, though, state support of Orthodoxy and political uniformity from above, combined with an increasing assertiveness in Islamic society from below, could exacerbate the political asymmetry between the size of Russia's Muslim minority and its representation in the national elite.[42]

Economic Security Considerations

The economic security implications include the increasing difficulty in capacity building, a labor reserve shortfall, the economic costs of HIV/AIDS, and the societal security implications that follow. Russia adopted an economic security concept in 1996 but it was outdated by the 2002 census, failing to take into account the impact of the demographic changes upon the Russian economy. Although the economic security implications of uneven population distribution and net population decline are not yet well understood, Putin has noted that the core factors that affect the Russian economy—the demographic situation, illegal migration, border and customs issues, and threats to the energy and transport systems—have rapidly changed in the new century.[43]

Analysts have already highlighted the current impact of the demographic decline on "capacity deepening" within the labor force (building on existing skills in order to increase productivity) and the reduction in savings and investment rates reinforces the decline in economic growth.[44] The need to maintain the high technology potential of the Russian workforce has been recognised by the Putin government, reflected in the decision to create Technoparks to both retain potential and recruit those Russians that have migrated abroad.[45] The main aim of the program is to support the development of the economy's high tech sector and to that end Prime Minister Mikhail Fradkov underlined "the very creation of these technoparks provides evidence that the economy has entered the innovation path of development."[46] Apart from some tax privileges, as an incentive the government also co-finances companies which relocate to these new Technoparks.[47] In 2007-2010, seven new Technoparks are planned for Moscow, Novosibirsk, Nizhegorodsk, Tyumen, and Kulush regions, as well as in Tatarstan and St. Petersburg. It is too early to tell if this initiative will prove effective.

Despite the fact that the further decline of the population is predicted and to an extent can be factored into long-term economic planning, it is extremely difficult to calculate the impact of an apparent reduction in savings, rates of investment, and economic growth on the economic security of Russia because the nature of the decline—who dies and when—is unpredictable and non-linear and therefore imposes variable economic costs.

Russia faces the problem of widespread elderly poverty. With male life expectancy at 58.8 years, the Russian state is relieved from paying a consistent percentage of its pension bill. Nonetheless, because of a chronic lack of resources, the social safety net is still unable to fulfil its obligations. To address the crisis of the pension system, former Prime Minister Mikhail Kasyanov announced plans to launch a 50-year pension reform, which would take into account the country's current and expected demographic and economic situation. The workforce supply will probably continue to exceed demand and the dependency ratio—the ratio of persons not of working age ("dependents") to those of working age—will actually decrease from 42 to 36 percent of the population. This creates a small window of opportunity for the Russian government to reform the pension system, as the young people born in the 1980s baby boom will only join the job market in the next few years, swelling the workforce by 1.0 million. Education and Science Minister Andrey Fursenko, citing a Federal Statistics Service forecast, has stated

that the number of Russian people aged between 15 and 25 will decrease by more than a third by 2015, to as low as 18 million. By 2016 "the dependency ratio, which is the number of dependents per 1,000 working-age population, will increase by 20 per cent on 2005, to reach 709 people."[48] However, in the longer-term, the dependency ratio will swing in the other direction, resulting in the diversion of greater state finance towards the elderly and less upon the economy or military.

As well as facing a shortfall in labor reserves, Russia is confronted by an economic security dilemma in some parts of the federation. Sergey Mironov, the head of Russia's Federation Council, highlights the critical importance of the Asia-Pacific region to Russian economic growth and modernization, stating that this region accounts for 55 percent of the world's GDP and 60 percent of the global market. If moderate economic growth is recorded in the Russian Far East, for example, then it is calculated that this will increase the mobility of the population and allow the current deferred migrants to leave for European Russia. It is economic stagnation that keeps the emigration at current levels and only a massive economic resurgence would return incentives, subsidies, and benefits to workers in these peripheral regions, thus increasing immigration.

Societal Security Considerations

Throughout the 1990s, the inflow of migrants has played a crucial role in balancing out the demographic decline in Russia. Between the 1989 Census and the one in October 2002, Russia absorbed a net influx of migrants—a total net addition of 5.5 million was recorded.[49] However, with the stabilization of economic and political conditions in many CIS and Baltic states, the number of migrants has fallen. Estimates of the Ministry of National and Migration Policies claim that to keep the country's population at 140 million, between 700,000 and 1 million immigrants need to be attracted annually, while in 2001 only 380,000 people moved to Russia.[50] By 2003, "the number of migrants from the Commonwealth of Independent States was only one-eighth of what it had been back in 1992." The diaspora population has fallen from 25.2 million in 1989 to 18.2 million, according to analyses of the first round of censuses in the post-Soviet space, reflecting partly a real decline and also a decline in those who identify themselves as "Russian."[51]

As a result of this trend, even by the late 1990s the focus of sources of immigration to maintain population levels had shifted from the repatriation of the Russian diaspora in the CIS to the arrival of economic migrants and refugees from both CIS countries and countries of the so-called "far abroad" (countries outside of the former Soviet Union). However, the fact that "foreign" immigration is a relatively new phenomenon for Russia makes it difficult for ordinary citizens and state authorities to adjust to it.

While most specialists dealing with Russia's demographic crisis argue for the necessity of increasing immigration rates in order to win the "demographic battle," an ethnic "drunken fight" in the tiny town of Kondopoga, near the capital of Karelia (Petrozadvodsk), in the Northwest Russian Federal District, led to serious interethnic clashes, involving extremist organizations. In late August 2006 a drunken scuffle between an ethnic Azerbaijani bartender and a few ethnic Russians exploded into a mass brawl involving armed ethnic Chechens in support of the ethnic Azerbaijani. The fighting claimed the lives of two men and left many others severely injured and led to the evacuation of ethnic Chechens families from Kondopoga in order to prevent further pogroms.

The mayor of Petrozavodsk, Viktor Masliakov, noted that extremist youth groups and organizations had arrived from Moscow and St. Petersburg, met in Petrozavodsk, and had been involved in the conflict in Kondopoga in "support" of ethnic Russians against migrants from the Caucasus. He warned that "some people are trying to make Petrozavodsk an example for the whole of Russia."[52] This event underscored the actual and potential challenges posed by the adoption of a large scale immigration policy in today's Russia.[53] Indeed, it was not so much the deaths the conflict caused, but the fact of popular unrest in combination with the rise of extremist organizations, that creates a very dangerous example for cities throughout Russia that have similar interethnic complexions but larger populations. Russian chess grandmaster

and leader of the United Civil Front, Garry Kasparov, declared that the events in Kondopoga reflected the "whole complex of all Russian problems."[54] Alexander Dugin, a philosopher and the chairman of the Eurasia political party wrote that "the events that exploded to the surface in that small microcosm of Russian society reflect the country's situation on the ethnic, professional, and psychological plane. Kondopoga may blaze a trail into the abyss for all of us, as the road of interethnic tensions will only lead to Russia's collapse, to a finale where it will lose its leading positions in global geopolitics."[55] Fears of continued mass unrest between ethnic Russians and Caucasian "newcomers" have led Russian authorities to deploy the regional OMON (Police Special Units) to prevent large-scale pogroms.[56]

This issue is particularly relevant in the Russian Far East, where the total population has fallen from approximately 8 million in 1990 to 6.7 million in 2002, whilst in the three provinces in northern China that border the Russian Federation (Heilongjiang, Jilin, and Inner Mongolia) the total population is above 100 million. This growing population density disparity between Russia and China has raised the profile of this issue.

By 2050, the proportion of immigrants in the work force will rise to at least 20 percent, while some sociologists have forecasted that 7-10 million Chinese will live in the Russian Federation. Zhanna Zayonchkovskaya, head of the population migration laboratory at the Russian Academy of Science's Institute of Economic Forecasting, for example, has predicted that by 2050, the Chinese in Russia may become the second largest ethnic group after ethnic Russians. Chinese will constitute an inalienable component of the Russian work force, capable of reviving the national services, construction, municipal transport, and agricultural sectors.

A rising number of well documented racist attacks on individuals of Caucasian and Central Asian origin and the increasing emphasis the authorities have been putting on the illegal aspects of immigration testify to the growing discomfort around the issue of migration.[57] Experts note the emergence of forms of "migrantophobia" that paradoxically appear to be strongest among members of the public seldom in contact with immigrants. Increased societal tension and the development of cultural stereotypes by local and national authorities eager to gather the political rewards of chauvinism are equally responsible for an inconsistent policy line, increasingly geared towards a discriminatory understanding of immigration.

However, assessments of increasing immigration appear exaggerated. The most realistic assessment is that no more than about 280,000-300,000 Chinese migrants can be found in the Russian Far East on any given day and around 90 or so percent of them are most likely to be transient, temporary cross-border migrants.[58] Furthermore, North Korean and Vietnamese workers may be included within these composite "Chinese immigration" figures. The perception of a Beijing-controlled, state directed, neo-imperial colonization project is a myth that masks the reality of poorly managed, locally initiated, and small-scale ad hoc movements of largely transient Chinese labor into the Russian Federation. As Sergey Luzyanin has noted: "Realistically, there are some 250,000 but at any rate no more than 300,000 Chinese of permanent residence in Russia now. So, in general, this issue is not so acute. It is not so in reality. Objectively, of course, there is a demographic threat of expansion," he acknowledged. "This is plainly the case, given that there are 270 million Chinese in the three provinces in the northeast of China, against five to six million Russians in Siberia and the Far East. For the moment, there is no planned, systematic migration policy on the part of Beijing. God forbid that it should appear. It is for that that we need strategic relations between Beijing and Moscow."[59]

Military Security Considerations

The Russian military has been contracting in terms of personnel, resources, and prestige throughout the 1990s and into the new century. Deputy Chief of the General Staff Colonel General Vasily Smirnov notes that the pool of Russian men eligible to be drafted into the army is decreasing by over 100,000 a year: "Because of the demographic situation, the draft will be more restricted in the future than at present. In 2005, we registered 1,200,000 men, and this year 1,100,000 men, and forecasts for next year are even lower." Quantity is an issue, but so is quality of conscripts: "This year about 50 percent of the draftees have various health defi-

ciencies and cannot be sent to line units of the armed forces."[60] The organization-mobilization department of the Ministry of Defense twice a year "ritually" complains of the quality and quantity of recruitment after each recruitment drive draws to a close.[61] However, such complaints are not simply means of pressurising the Finance Ministry to increase the defence budget, it is becoming increasingly clear they reflect a reality that is steadily worsening.

Thus demographic factors will largely shape the nature, pace, and direction of military reform in conventional forces. Demographic change will force the Russian military to accept a radical downsizing of the Russian armed forces. This suggests that Russia will effectively end mass conscription and move by default to the creation of a professional army with contract service and an enhanced technological capacity to compensate quantity with quality. This will demand greater resources. Given the projected "dependency ratio" between the able-bodied and the aging population increases after 2006-2010, there are clear resource and financial implications for future levels of GDP and affordable military spending for the Russian Federation. In short, the greater state resources directed towards Russian pensioners the less state revenue available for "military transformation" expenditure.

The downsizing of Russia's armed forces has the unintended consequence of reinforcing internal migration patterns. For many communities, the presence of large armed formations acts as a magnetic center for other networks and industries. The reduction in military forces, a feature of the last 10 years, has been particularly acute, for example, in the Far Eastern Military District and has contributed to the reduction in the population as employment opportunities related to the military diminished. Between 1989 and 1997 ground forces shrank from 24 to 10 armored and motorized divisions, 120 to 43 submarines and 77 to 45 surface ships.[62]

It has been hypothesized that military reductions might in turn reduce populations in peripheral regions below recoverable levels. As the armed forces reduce their size, the likelihood that populations in peripheral communities will migrate to European Russia increases. This in turn increases the necessity for the state to deploy troops to defend these peripheral and further depopulated regions whilst at the same time rendering this task more difficult. One analyst, aware of the population differentials on the Russo-Chinese border (1:15-20) has even suggested: "Perceptions of low Russian population densities in the Russian Far East could lead to low-level Chinese probes and low intensity conflict in the next 10-20 years, but the continued existence of a substantial Russian nuclear arsenal will probably prevent the Chinese from seriously considering the option of launching a conventional military campaign to seize large parts of Russian territory as a result of demographic factors."[63]

POLICY IMPLICATIONS OF DEMOGRAPHIC DECLINE

The Russian population is falling, and this demographic decline has induced interlinked instabilities in the political, economic, and social spheres, which the state has begun to address. Population migration patterns have increased minority separatism in that the majority ethnic Russian Europeanised population is physically becoming more separated from the Eurasian minority periphery population and here "separation" can be measured in terms of ethnicity, age, and wealth.[64] This internal migration and population decline has foreign and security policy aspects, not least the management of competition between Russia, Ukraine, and Kazakhstan for the desirable but diminishing diaspora population, and the emphasis population decline and citizenship places upon the management of intractable separatist projects on Russia's borders. It also refocuses attention on the continued sustainability of the EU and China strategic partnerships in the face of "brain drain" and Schengen border tightening as well as the perceived threat of Chinese colonization of the Russian Far East.

Demographic decline and the security challenges it poses have promoted responses from the center in terms of policy initiatives designed to manage the current decline and control the redistribution of the population within the federation. This includes the elaboration of a migration policy, a demographic concept and policy, and a reformulation of a citizenship policy. The decision taken in November 2003 to allow a more permissive citizenship law—all those who formerly held USSR citizenship could now claim Russian citizenship—allows us insight into

current presidential priorities, although a backlash that restricts citizenship once again cannot be discounted (given the strength of the debate apparent at the draft law stage).

As the threats to the country's security posed by the demographic crisis are so extensive and profound, more vigorous governmental intervention to combat the population decline, by both providing support to natural population growth (aiming at increasing fertility or curtailing mortality) or by encouraging immigration, might have been expected during the Putin administration's first term. In May 2006, Putin called for a 10-year program to stop the sharp decline in Russia's population, principally by offering financial incentives and subsidies to encourage women to have children to increase the birth rate, as well as measures to cut the death rate and develop an effective migration policy. Indeed, legislation passed in 2005-2006 indicates the development of a coherent "managed migration" strategy that encourages regular migration through increasing the attractiveness of Russia as a migration destination, identifying clear and easy-to-follow procedures of entry, registration, and employment.[65]

However, Putin has an uneasy balance to maintain, with current brakes and filters reflecting an understanding that economic growth cannot occur at the expense of political stability or societal identity, which could result in a rise in ethnic or religious tensions within the federation. At present, the state lacks the political will to deploy adequate economic resources towards managing the population decline, while regional elites and powerful bureaucratic interests appear to be hijacking migration and demographic policies to further their own power bases and institutional interests.

Over the remainder of the second term of the Putin presidency, a coherent demographic policy needs to complement the new managed migration strategy. This policy must untangle the dilemmas associated with promoting economic growth whilst maintaining political stability and societal security: "The level of military security is directly related to the speed of economic growth and technological development. The demographic situation is most favorable in a country that not only reaches high social standards, but whose people feel secure for a long time and plan their life for a long time."[66] Putin ought to continue to formulate demographic policy in terms of national security concerns and strategic threats to Russia, in order to forge a consensus at the federal elite and expert levels on the necessity of funding natural population growth and less restrictive immigration. This consensus should allow the elite to overcome public alarm, the special interests of regional elites that favor opposing immigration, and bureaucracies that want to own the process rather than implement the policies. The short-term erosion of Putin's popularity and the political instability that such a project entails are easily offset by the longer-term gains made through the sustainability of the federation and the reduction of ethno-strategic vulnerability and the resultant diminution of minority separatism tendencies.

CONCLUSIONS: RUSSIAN POPULATION DECLINE AND GREAT POWER POLITICS

On July 8, 2000 in his first State of the Nation speech, Putin noted that demographic decline was one of the most important problems facing contemporary Russia: if the situation does not change "the very survival of the nation will be endangered."[67] Six years later, in his May 2006 State of the Nation speech, he still described the demographic crisis as "Russia's most acute problem."[68] What, therefore, might we conclude about the effectiveness of policy responses in Putin's Russia? Has the "state of the nation" changed or not?

At the beginning of December 2006, Mikhail Zurabov, the minister of Health and Social Development, reported to Putin that the demographic situation in Russia at the end of 2006 was the best it has been since 1999.[69] He reported a certain number of positive changes in trends such as a one percent increase in birth rates, a five percent decrease in death rates, as well as positive migration growth. However, one must be very cautious when assessing the significance of such developments because of the very small scale of the changes, which often only occurred at the end of the year. Zurabov himself was asked by Putin whether this improvement was a sustainable trend. He responded rather evasively saying that "we tend to think that, yes."[70]

It is difficult to have a very precise understanding of current improvements. On the one hand, since 2004 there has been a small growth in immigration rates that had been declining since 1994, as well as a slight growth in birth rates and decreasing death rates. Yet, on the other hand, some specialists highlighted the rather temporary nature of such improvements. Ekaterina Sherbakova points to the fact that 65-70 percent of deaths accounted for by Zurabov are for people who are approximately 60 years of age. Given the fact that the pre-1945 generation was larger than the post-1945 generation, the decline in death rates does not necessarily point to a structural improvement in high mortality rates.[71] The same logic, with some caveats, could be applied to account for improving fertility rates, noting that the "mini baby-boom" generation of the 1980s is now of reproductive age—the so-called "Gorbachev effect"—and that this trend will be short-term and reversed when the baby-bust generation of the 1990s come to reproductive age.[72]

Thus, to review the "demographic state of the nation" between the years 2000 and 2006, we can note that the population has suffered an overall decrease, despite a small increase in birth rates (accompanied with an increase in death rates until 2003) and positive migration. Although the demography project was the largest of the pan-federation social projects with the largest budget, experts and international organizations appear to agree that the Russian population will continue to fall, at least over the next few decades.[73]

On a national level and with an eye to the presidential elections in March 2008, demographic threats can also be woven into a campaign discourse that advances elite continuity. Rather than the Faustian "loans for shares" pact of 1996, or the initiation of a second Chechen campaign in 1999 ahead of the 2000 election, March 2008 could well be characterized by the creation of a new Super-National Russian idea—a unifying strategic rationale on a par with the "Third Rome" ideology of the medieval and early modern period.

Such a discourse is founded on the contention that Russia faces a host of implacable state, structural, and systemic enemies, both domestic and foreign. The demographic crisis, Chechnya, and the dangers of fundamentalist Islamist spillover into Dagestan, the rise of organized crime, NATO encirclement and US bases, the EU/OSCE-backed "color revolutions" (aided by the CIA and Soros), and the worsening plight of "compatriots" living in the post-Soviet space are likely contenders. Collectively they create the specter of multiple threats, which the opposition parties and potential presidential candidates may well be able to identify, but that only the incumbents can defeat. "Sovereign democracy"—a phrase that Vladislav Surkov, Deputy Chief of Staff of the Presidential Executive Office, test-drove earlier in 2005 and is now repeating again—will become the watchword of such a policy, its *raison d'être,* and the sunlit paradise to which only Putin's chosen successor can lead the Russian people. The very existence of the Russian state is at threat: existential survival can only be guaranteed by elite continuity.

If creating a psychological environment characterised by fear and xenophobia (an enduring feature of Russian political culture) to promote incumbent power is the chosen electoral strategy of Kremlin strategists and political technologists, it will be extremely interesting to see exactly how these different threats are utilized instrumentally to secure domestic political power, and the role allotted to demographic decline within this discourse. Already, Russian geopolitical thinking includes the protection of compatriot rights in Abkhazia and South Ossetia in Georgia, as well as the Dniester Region in Moldova, with the expulsion of Georgian migrants from Russia a by-product of the Russia-Georgia crisis of late 2006. The long-term population and migration strategies Russia is attempting to develop can easily be disrupted by short-termism, geopolitical expediency, and the necessity of ensuring elite and state consolidation continuities between the Putin presidency and the one to follow. That human security, national security, demographic decline, and Eurasian geopolitics is increasingly closely intertwined makes effective policymaking extremely challenging: Russia must rise to the challenge if it is to achieve its Great Power ambitions.

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Anton Khlopkov[1]

WHAT WILL A NUCLEAR AGREEMENT WITH THE UNITED STATES BRING RUSSIA?[2]

The decision of the presidents of Russia and the United States, Vladimir Putin and George Bush, to start negotiations on the signing of an agreement on civilian nuclear cooperation (a 123 Agreement)[3] was an unexpected result of the two leaders' meeting on the eve of the G8 Summit in St. Petersburg in July 2006. Immediately thereafter, head of the Federal Atomic Energy Agency Sergey Kiriyenko stated at a press conference that it would take "at least one year" to draft the agreement.[4] An agreement was finally initialed by the U.S. and Russian presidents on July 3, 2007.

What technical and political benefits could Russia's nuclear industry, government, and research institutes derive from the agreement? Could the agreement have a positive influence on the development of nuclear energy in Russia and increasing the competitiveness of Russian nuclear power plants (NPPs) and nuclear fuel-cycle services abroad? This and other questions are the subject of this article.

RUSSIA'S FIRST ENCOUNTER WITH THE 123 AGREEMENT

In 1989, at the International Symposium on Space Nuclear Power Systems in Albuquerque, New Mexico (United States), U.S. specialists indicated their great interest in the presentations by the Russian scientists Academician Nikolay Ponomarev-Stepnoi and Krasnaya Zvezda director Georgy Gryaznov on the results of the development and testing of the *Topaz* thermal emission space reactor.

The *Topaz-1* nuclear unit (also known as *Topol*) was designed under the scientific guidance of the Institute of Physics and Power Engineering (Obninsk, Kaluga Region) in accordance with CPSU Central Committee and USSR Council of Ministers decree No. 702-295 of July 3, 1962, to be used in radar reconnaissance spacecraft, while the *Topaz-2* reactor (also known as *Yenisey*) was designed by the Kurchatov Institute of Atomic Energy in accordance with CPSU Central Committee and USSR Council of Ministers decree No. 715-240 of July 21, 1967 to be used in spacecraft for broadcasting television from outer space.[5] Flight units of the *Topaz-1* reactor were launched into space as electric power sources on the naval reconnaissance satellites *Kosmos-1818* on February 2, 1987 and *Kosmos-1876* on July 10, 1987.[6]

From the mid-1980s, Soviet financing of this area of research was significantly reduced, like many other areas related to nuclear technology. In order to transform the technologies into industrial designs, the Russian enterprises started seeking international cooperation, a possibility which appeared with the advent of *perestroika*.

In April 1989, the Kurchatov Institute of Atomic Energy hosted negotiations between Soviet *Topaz-2* designers (Kurchatov Institute of Atomic Energy, Central Design Bureau for Machine Building (TsKBM), Luch Scientific Production Association) and representatives of the U.S.

company Space Power Inc. (SPI). The negotiations dealt with the possibility of cooperation in the sphere of civilian space thermal emission reactors, as an alternative to solar power units.

The negotiations resulted in a decision to hold a demonstration of a *Topaz-2* reactor unit (without nuclear fuel)[7] in January-March 1991 at the next Symposium on Space Nuclear Power Systems in Albuquerque, and at the "Science-Space-Conversion" exhibition at the University of Maryland.[8,9]

The demonstration of the system generated great interest among U.S. scientists. However, when the time came to return the system to Russia, the Russian scientists ran into unexpected difficulties arose. U.S. Customs refused to allow the return of the system on the grounds of the absence of a relevant license, and U.S. licensing authorities refused to allow the system to be shipped from the territory of the United States on the basis of the Atomic Energy Act of 1954, which allows U.S.-Soviet cooperation in nuclear technologies only if there is an agreement on the peaceful uses of nuclear energy (a 123 Agreement) between the two countries.

The import of the system to the United States from the Soviet Union also fell under the legal limitation under the Atomic Energy Act, but the Americans had given special permission for the import. The top managers of Space Power Inc., which had received the permission to bring the reactor unit to the United States, asserted that they did not know of the difficulties that might arise in seeking to return the equipment. The Russian scientists had to come back to Moscow without *Topaz-2*. The need to return the system back to the Soviet Union became quite urgent.

One morning, after again having heard in his car on the way to work a report on the "detention of Topaz-2" in the United States, Minister of Atomic Energy and Industry Vitaly Konovalov met in the corridor of the ministry with Academician Ponomarev-Stepnoi, who headed the Russian delegation at the conference in Albuquerque, and noted reproachfully: "Still, you have to return the system!" "I will!" answered the academician, who had already been thinking hard for several weeks about how to overcome the restrictions set forth by the U.S. Atomic Energy Act. There was no ready solution, and the lawyers recommended by the Kurchatov Institute's U.S. partners did not help either, since they confirmed that it was impossible to return the system due to the ban imposed by the act. And even possible alternatives like removing individual components of the system did not change the situation, because the system still was on control lists according to U.S. law.

In the end, Academician Ponomarev-Stepnoi decided to seek a solution at the very top: he decided to write to President George Bush senior, who was the only individual, under U.S. law, that could decide in favor of the Soviet scientists.

Soon the letter was ready. It noted that, in contradiction to the desire of the U.S. and Soviet scientists, there were artificial bureaucratic barriers impeding this process, and one of the examples of that was the reactor's *blockade* on the territory of the United States.

Before sending the letter, the advice of someone more experienced in diplomacy was required. The choice was made in favor of Eduard Shevardnadze, who at the time had already resigned from the post of Soviet Minister of Foreign Affairs, and then headed the Foreign Relations Association. At the meeting, Eduard Shevardnadze carefully examined the letter and praised its contents. However, he suggested that Academician Ponomarev-Stepnoi should find a way to submit the letter to the U.S. president himself.

After a long telephone negotiation with the U.S. Defense Department, which was also involved in shipping the system to the United States, a fax number in Washington was obtained, to which the letter had to be sent.

The process of obtaining permission from the Bush Administration to return the system took several weeks, and only in May 1991 was special permission received from the U.S. president, permitting the return of *Topaz-2* to the Soviet Union.

This was how Russian scientists encountered the 123 Agreement for the first time in practice. In the following years, several U.S. presidents gave similar permission, providing an opportunity for the nuclear industries of both countries to cooperate (for the supply of Pu-238, which is used as an energy source in spacecraft; for the HEU-LEU Agreement, which supplies fuel to

50 percent of the NPPs in the United States, etc.). However, during the time that has elapsed from the moment of Russia getting its first "taste" of the 123 Agreement, no legal basis for long-term cooperation between the two countries in the sphere of nuclear energy has been created.

POTENTIAL AREAS OF COOPERATION

In order to determine the possible areas of cooperation with the United States in the nuclear sphere at the present time, one must first understand the main elements leading the development of Russia's nuclear branch in the intermediate- and long-term, and identify those areas where Russian scientists and companies need international cooperation, in part with their U.S. colleagues.

Under the Federally Targeted Program "The Development of the Nuclear Industry in 2007-2010 and its Prospects till 2015," approved by the Russian government on October 6, 2006, there are plans to put 10 new nuclear power plant units with a total generating capacity of no less than 9.8 GWt into operation, bringing the total installed capacity of the nuclear power industry to 33 GWt. Implementation of this plan will mean that the share of electricity produced by NPPs will amount to 18.6 percent of Russia's entire output of electric power, while NPP operating costs will be 20 percent lower than in 2006.[10] By the year 2030, Russia plans to put 42 nuclear power reactors into operation, increasing the share of the nuclear power production sector to at least 25 percent of the entire power output. In order to attract additional funds for the development of nuclear industry, the goal was set to simultaneously boost exports of nuclear technologies at a level comparable to their domestic introduction.

The time before 2030 is regarded as a period of transition to innovative technologies, given that the time needed for development and commercial production in the nuclear industry is commensurate with the duration of the service life of the industry's key facilities, which as a rule can last several decades. After 2030, the current nuclear industry shall transition into an "innovative nuclear power industry," which is to be completed by 2050.

In the preliminary phase, the build-up of the nuclear industry's output will be done by putting into operation upgraded pressurized light water reactors. Further output growth will be accomplished by putting commercial fast reactors into operation.

LIGHT-WATER REACTORS, CHANNEL REACTORS, AND OTHER OPERATIONAL REACTORS

Increasing the capacity factor of nuclear power plants in operation

One of the key problems of Russian atomic energy is the low capacity factor (CF). In 2006, it constituted 75.9 percent[11] for Russian nuclear power plants (31 nuclear reactors in total), which, despite steady growth over the past few years (in 2002 it was 71.7 percent, and in 2005 it was 73.4 percent), is far from the average in the United States and the European Union, where it is 85-90 percent.

Increasing the CF depends on decreasing the regular maintenance periods and refueling time, which in turn depends on the quality of the equipment section and the efficiency of the reactor automatic process control system (APCS).

The CF of the 103 operating power reactors in the United States in June 2006 was 89.6 percent, and the average refueling time was 32 days.[12] For comparison, refueling and maintenance at one of the most modern Russian NPPs, the Balakovo NPP, takes 50 days on average.[13] Moreover, the United States managed to increase the CF at their NPPs in 1997-2002 by 10 percent, and to decrease the refueling time in 1990-2004 from 74.5 days to 32 days, with installed nuclear capacity more than four times higher than in Russia, and power generating units generally older than Russian ones.

Thus, it would seem expedient for the Rosenergoatom company, which is responsible for operating Russian nuclear power plants, to examine the U.S. experience, and possibly conduct joint activities with U.S. scientists aimed at increasing the effectiveness of operating power plants. At present Russia is already conducting this sort of cooperation with Germany. With the assistance of German specialists, fuel handling machines at all four reactor units at the Balakovo NPP will have been modernized by 2009. Russian hardware components lag significantly behind European and U.S. ones; here too, cooperation may be in Russia's interest, with a view towards increasing the CF of light-water reactors and their competitiveness abroad.

Decreasing maintenance costs and extending the operating life of NPPs

Another natural area for cooperation between Rosenergoatom and its U.S. counterparts is the exchange of experience in extending the operating life and decreasing the maintenance costs for NPPs. According to the Federally Targeted Program "The Development of the Nuclear Industry in 2007-2010 and its prospects till 2015," Rosenergoatom has to cut costs by 20 percent before the year 2015.

The United States has positive experience in implementing programs aimed at lowering maintenance costs (operation, process control, and fuel supply) for NPPs. From 1987 to 2001 these costs in the United States decreased more than twofold (from 3.4 to 1.68 cents/kilowatt-hour); they currently stand at approximately 1.5 cents/kilowatt-hour.

Another positive experience in U.S. NPP operation is in the area of extending nuclear power unit's service lives to 60 years. The initial duration of an NPP operating license in the United States is for a period of 40 years; the license may be extended for an additional 20 years thereafter. In Russia the design service life of an NPP is 30 years[14] and it can be extended for an additional 15 years, making nuclear energy less economically attractive in Russia, given that capital expenditures constitute approximately 70 percent of nuclear energy costs.

Participation of U.S. companies in manufacturing equipment for Russian NPPs

The rapid decline in the output of the power plant industry over the last 15 years led to a loss of specialties at a number of formerly key enterprises in the Russian nuclear complex. A number of industrial giants like Atommash, in Volgodonsk, were privatized and underwent significant conversion towards other production. The initiation of large-scale Russian nuclear projects necessitated an actual recreation of certain links in the chain of engineering equipment in partnership with international corporations. Under the NPP-2006 project for the creation of next-generation, VVER-1,000 light-water nuclear power reactors (with an increased reactor unit installed capacity of up to 1,150 MWt, increased CF and electricity generation, and a combination of active and passive safety systems), plans call for the basic equipment to be produced in Russia, while auxiliary equipment may be partially substituted by imported equipment.[15]

For instance, Atomenergomash (a 100%-owned subsidiary of the TVEL concern) is holding talks with a number of western companies, including Alstom (France) and General Electric (U.S.) on establishing a turbine manufacturing joint venture.[16] The latter was reportedly offering to invest up to $100 million in the Russian machine-building industry.[17]

There has been a foundation for bilateral cooperation in the turbomachinery industry. In November 2006, Russia's Saturn research and production association and the GE Corporation agreed to build a joint production facility to manufacture industrial gas turbines under the U.S. corporation's license in Russia. The output of these industrial gas turbines is believed to range from 40 to 150 MWt.[18]

The 123 Agreement should give fresh impetus to cooperation between Russian and U.S. power plant engineering companies.

Joint construction of NPPs abroad

Cooperation in the field of light water reactor instrument components and automatic process control systems (APCS) could also be of interest for Atomstroyexport, which exports Russian reactors.

The global competitiveness of Russian NPPs depends to a large extent on the quality of modern systems to control technological processes at NPPs. In a number of projects abroad, including the construction of NPPs in Bushehr (Iran) and Kudankulam (India), Russia uses Russian-made APCS. However, this is mainly due to legal or political limitations on the participation of European or U.S. companies in the supply of nuclear power equipment to these countries, and not the competitiveness of Russian-made systems. However, there is a precedent, when due to the uncompetitiveness of Russian automated process control systems, a foreign customer insisted on using third-country equipment and systems during the construction of an NPP. For instance, during the conclusion of the contact for the construction of the Tianwan NPP in China, the customer put forward a requirement that the APCS should be not a Russian-made one, but one made by Siemens.[19]

Therefore, in order to increase the competitiveness of Russian NPPs on the foreign market, the company should outsource the supply of equipment for the construction of VVER-1000 reactors to Western contractors. This has already taken place. The tender for the construction of two reactors in Belene (Bulgaria) in 2006 was won with participation of Germany's Siemens and France's AREVA, which will supply digital APCS and some other equipment directly affecting the safety of the NPP and its technical and economic performance indicators. The joint Russian-German-French project can ensure higher technical and economic performance indicators through reduction of outage time, the increase of the service life of the main equipment to 60 years, and an increase in the capacity factor to 90 percent.[20]

Clearly, Atomstroyexport's future tenders for the construction of NPPs in eastern Europe will be more attractive to potential customers if it cooperates with foreign companies in APCS. Moreover, international cooperation in NPP construction doesn't just mean technological cooperation, but also political cooperation; it generates acceptance of such projects on the part of neighboring states—in the case of the countries of eastern Europe, that means the European Union. Were Atomstroyexport to cooperate with U.S. companies, it might have a positive effect on the views Asian and Latin American countries take of Russian projects.

One of the promising places for cooperation between the two countries is Turkey, which is planning to develop nuclear power and to build its first nuclear reactor on the shore of the Black Sea by 2015.[21] Turkey is a NATO member and is seeking E.U. membership; therefore, it would be difficult for Russia to gain access to the Turkish market alone. However, the chances increase significantly if Atomstroyexport cooperates with Westinghouse. On such a project, Russia's role could at least consist of supplying heavy equipment, including reactor vessels and steam generators. However, cooperation should be built upon mutual commercial, and not political, interest.

In general, such cooperation corresponds to contemporary global trends in reactor construction, since the decline of global capacities to construct NPP equipment over the past 20 years has made international cooperation inevitable in this sphere. For instance, Westinghouse has united its efforts with Japan's Toshiba, while General Electric has created an alliance with another Japanese company, Hitachi, Mitsubishi is cooperating with the French Areva, while the latter also own the nuclear division of Germany's Siemens.

Design of a new commercial light-water reactor

One more possible area of U.S.-Russian cooperation may be joint work on a next-generation light-water reactor to compete with Europe's EPR-1600.[22] Otherwise, Russia risks finding itself in the situation where it's competing on foreign markets with a European reactor of increased power and a U.S. reactor with the AP1000 passive safety system. It's hard to predict the outcome of such a competition, even taking into account Russia's new NPP-2006 and VVER-1500 projects.

However, a joint U.S.-Russian tender for the construction of light-water reactors abroad is not guaranteed success: Westinghouse has not had an order to build an NPP in the United States for over 30 years. But this sort of cooperation considerably increases a joint project's chances, particularly when one considers the possibility of joint political efforts to promote the reactor in third countries. Incidentally, nor can one completely exclude the possible cooperation of Russian scientists and engineers with their European counterparts on the EPR-1600 project.[23]

THE SUPPLY OF NUCLEAR MATERIALS FOR NPPs IN THE UNITED STATES

At the present time, Russian nuclear materials (NM) supplied via the HEU-LEU Agreement make up 50 percent of the electricity generated at U.S. NPPs. Since U.S. nuclear plants produce about 20 percent of the country's electricity, about 10 percent of U.S. electric needs are met thanks to NM from Russia. As of December 31, 2006, a total of 8.54 metric tons of low-enriched uranium had been supplied to the United States through the HEU-LEU Agreement, which is enough to meet the needs of nine VVER-1000 reactors for 40 years. According to Russian Foreign Ministry data, the yearly profit from the realization of this contract is about $700 million.[24]

Russian continues to have a significant scarcity of uranium extraction. The current consumption of uranium in Russia is on the order of 10,000 tons/year, while extraction is about 3,200 tons. The total deficit is on the order of 7,000 tons. According to the nuclear power development program, the demand is about 15,000 tons, and the deficit 12,000 tons.[25] According to domestic forecasts, Russia will only be able to reach a level of extraction[26] that will cover all of its domestic needs in 2015-2020. This is forcing the leadership of Rosatom, which is supplying uranium abroad, to examine the amount of domestic consumption of raw uranium materials.

U.S. representatives have repeatedly emphasized their interest in extending the program and the initiation of a new "Megatons to Megawatts-2" project. However, Russia is not interested in extending the HEU-LEU agreement. Nevertheless, Rosatom head Sergei Kiriyenko has already stated that Russia would like to maintain the quantity of its uranium sales to the United States, but wants to undertake them through commercial contracts based on market prices, and not via USEC, a monopolist, as is happening at present.[27,28]

NUCLEAR MATERIAL PROTECTION

Much has been accomplished through U.S.-Russian cooperation in the field of the protection of nuclear materials and facilities since the signing of the government-to-government MPC&A agreement on September 2, 1993. Thanks to joint efforts, Russian nuclear facilities not only have been equipped with adequate safety and security systems, but have adopted modern methods for handling and storing nuclear materials as well, which in the Soviet Union relied entirely on personnel. Thanks to these joint work, modern computerized technologies have replaced a rifle-wielding soldier, particularly in Russia's nuclear-powered navy. The bilateral cooperative partnership also resulted in other important achievements, including the establishment of a regulatory framework for MPC&A, an industrial system for the automated transportation of nuclear materials, and a personnel training system.

Thus, the foundation was laid to develop and strengthen the MPC&A system in Russia, making it capable of responding to new challenges and threats, such as terrorism. However, funding for MPC&A programs after 2012 (after the end of the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction) should come exclusively from the Russian budget. Over the last 15 years, Russia has become to a large extent self-sufficient in the technical side of MPC&A; provided the legal framework is in place, the facilities and equipment that currently are not produced domestically can be procured on the international market.

In addition, it is clear that U.S.-Russian cooperation in the area of physical protection must be transformed from a *donor-recipient* format to a partnership of equals. U.S.-Russian collaboration in the area of technology and equipment for physical protection should be transferred onto

a commercial basis (a *buyer-seller* format). A 123 Agreement should provide the long-term legal basis for such a relationship.

However, the end of the Global Partnership program does not mean that these countries will lose their common interest in the sphere of NM physical protection. The increasing technical abilities and preparedness of terrorist organizations have created new, increased requirements for effective MPC&A measures. Therefore, and given the need to increase the anti-terrorist capabilities of nuclear facilities, it would make sense to create a means to share experiences, new approaches, and methodology for ensuring the security of installations and materials located at enterprises in the nuclear industry. One of the areas for cooperation between the two countries in the area of MPC&A could be the IAEA and the Agency's activities in the development of international standards in this sphere.

POWER REACTOR SAFETY

The safety of nuclear power industry is a supranational issue. An accident at a nuclear facility will jeopardize and probably even end the development of the nuclear power industry in all countries, without exception.

The United States and Russia have collaborated extensively in the field of RBMK high-power pressure-tube reactor safety. However, this cooperation ended in 1998 after sanctions were introduced against the N.A. Dollezhal Research and Development Institute of Power Engineering (NIKIET), which was acting as a scientific advisory to the project at that time. After the sanctions were lifted in 2004, Institute leadership identified a list of potential areas of collaboration with the United States. Most of the efforts were focused at operating facilities, primarily RBMK reactors (the earlier cooperation had involved partnerships with Westinghouse Electric and Pacific Northwest National Laboratory, or PNNL). The list primarily included reactor safety. However, as of December 2006 the cooperation has not been renewed. We believe that this area of cooperation could be renewed with the conclusion of the 123 Agreement.

INTERNATIONAL URANIUM ENRICHMENT CENTER

Building upon President Putin's initiative, in mid-September 2006 Russia formally notified the IAEA that an International Uranium Enrichment Center (IUEC) was to be set up to make use of the isotope separation capacity of the Angarsk Electrolysis Chemical Complex[29] located in Eastern Siberia. The Center is intended to become an alternative source of enriched uranium for those countries that voluntarily decide against the development of national enrichment programs.

In addition, the center is open to countries that already possess separative capabilities, which, however, do not completely satisfy national needs. Further, Russia has not ruled out the possibility of a U.S. role in awarding uranium enrichment contracts to Russian facilities, including the IUEC, after the current HEU-LEU agreement expires in 2013 if by that time the U.S. enrichment plants in Ohio and New Mexico have yet to meet their full design capacities. In addition, uranium enrichment contracts are likely to be given to a new plant to be built by France's Areva.

In addition, the IUEC may be an element in the IAEA Nuclear Fuel Bank project that ensures nuclear power plant fuel supplies to countries that have no NPP fuel technology. These assurances may rely both on accessible fuel reserves to be used in the event a regular supplier defaults on a contract (i.e. a *physical fuel bank*) and on the obligation of fuel producers to set aside part of their product for the same purpose (i.e. a *virtual fuel bank*).

According to a U.S. international fuel bank proposal, the *physical fuel bank* could be controlled and managed by the IAEA. Given the plans to bring the IUEC under IAEA safeguards, it appears reasonable to give further consideration to the idea of setting up one of the reserve fuel storage sites at the IUEC. Such a storage site could hold a reserve of the enriched uranium product in the form of uranium hexafluoride.

Participation in the *virtual bank* project may also be of interest to the IUEC. Under this backup supply mechanism, an importing country facing a breach of its regular supply contract could apply to the IAEA and ask that the backup arrangement be exercised,[30] i.e. seek assistance in purchasing the nuclear fuel in a third country.

Russian cooperation with the United States (as well as with other countries possessing industrial uranium enrichment plants) is a prerequisite for the effective implementation of the International Uranium Enrichment Centers initiative. Political support from the United States could speed up the process of non-nuclear states joining the Russian initiative, which would have great importance for the nonproliferation regime.

INNOVATIVE NUCLEAR REACTORS

In order to make practical progress in the area of innovative nuclear reactors, given that Russia views fast reactors as an essential component of their development, as well as the fact that plans call for the use of nuclear energy in providing power for new energy technologies such as hydrogen production, the following basic tasks must be solved:

- ❑ Commercialization of the existing prototype fast reactor and closed fuel cycle technologies;
- ❑ Development of R&D and construction of a prototype innovative reactor and fuel technologies, with their subsequent commercialization as part of a final stage in the transition to an innovative nuclear energy industry.[31]

The development of innovative reactors is a large-scale research-intensive undertaking, requiring the united efforts of scientists from many countries. For Russia, the many tasks necessary for the development of innovative nuclear energy is complicated by the simultaneous development of a broad spectrum of reactor types in the country. For instance, in May 2006, Rosatom's innovation forum received 13 different innovative nuclear power reactor projects, and some of the proposed reactors used different types of fuel. For instance, oxide, nitride, and carbide fuels are all under consideration for use in sodium-cooled fast reactors.

Working under the GNEP initiative, the United States views development of a sodium fast reactor as one of the most promising projects. Under the Generation IV International Forum (GIF),[32] U.S. scientists are working on a high-temperature gas-cooled reactor. However, the Americans show no interest in lead-cooled fast reactors (like BREST). Thus, there could be Russian and U.S. interest in cooperating in the area of innovative reactors, primarily in the area of sodium-cooled and high-temperature gas-cooled reactors.

Sodium-cooled reactors

Russia has accumulated about 40 percent of the world's experience in fast reactor operation. The first prototype fast reactors were tested almost simultaneously with thermal reactors. The BR-1 and BR-2 reactors were put into operation in 1954 and 1956, respectively. Later, the sodium-cooled BR-10, BOR-60, BN-350, and BN-600 reactors were put into successful operation. The latter reactor has been in operation at Beloyarsk NPP in the Urals for more than 25 years, and is the only fast reactor in the world in commercial operation. The more powerful BN-800 reactor is also being constructed there; it is scheduled to be put into operation in 2012.

The United States started developing technologies in this sphere in the beginning of the 1950s. Five reactors were constructed, the last of which, the EBRD-2, was shut down during the Clinton Administration, in 1994. The main U.S. fast research reactor in Hanford was shut down in the end of 1993, and since 2001 has been undergoing decontamination; it will subsequently be dismantled.[33] Therefore, after the adoption of the GNEP program, the United States faced a lack of centers for testing the technologies and materials used in fast reactor systems.

Despite the availability of research centers actively working on fast reactor technologies in Russia (the IPPE State Research Center, Obninsk, Kaluga region and SRIAR State Research

Center, Dimitrovgrad, Ulyanovsk Region), the experimental basis for researching the properties of materials and fuel as well as for testing technologies related to the operation of fast reactors with sodium coolant, require further development.

Russia has tested oxide fuel technologies for fast reactors and is interested in nitride fuel. Studies on using minor actinides as fuel additives are under way. U.S. research is primarily focusing on metal fuel. There is interest under the GNEP program in oxide fuel that contains minor actinides, creating a possible area for cooperation and scientific exchange between the two countries. One of the possible sites for cooperation and testing various types of fuel *could* be Beloyarsk NPP, where the BN-800 fast reactor is under construction. However, without a 123 Agreement, U.S-origin fuel assemblies could not be shipped into Russia.

Another important area of cooperation between the two countries in the sphere of fast reactors should be developing safety principles and systems.

High-temperature helium reactor

Russia and the United States have a joint interest in high-temperature helium reactors. The experience and knowledge of both countries in this sphere are fairly similar.

There is a bilateral project currently under way that is looking at the development of a high-temperature gas-cooled next-generation reactor: the GT-MTR gas-turbine modular helium-cooled reactor. General Atomics and Afrikantov OKBM (Nizhniy Novgorod), with scientific oversight by the Kurchatov Institute, are working on the creation of a gas-cooled reactor capable of making hydrogen.[34,35] The project is being undertaken with equal funding from the Russian Federal Atomic Energy Agency (Rosatom) and the U.S. Department of Energy (DOE). Under this project, an experimental installation for the production of MOX fuel based on pellets with ceramic coating is being built at the Bochvar All-Russian Scientific Research Institute of Inorganic Materials (VNIINM) together with U.S. scientists. The experimental reactor installation should be ready in 2015, but the first prototype industrial high-temperature gas-cooled reactor will not be completed until 2023-2025. The project will cost at least $2 billion.[36]

Given Russian and the United States' common interest in building innovative reactors, and the shortage of experimental facilities for their refinement, the prospects for creating international research centers for fast reactors in Russia and analogous centers for high-temperature thermal reactors in the United States should be explored, if the Russian and U.S. specialists can be given the opportunity to conduct experiments in each other's research centers. Trilateral cooperation in this the field is possible with the creation Europe of a research center in Europe for heavy metal-cooled fast reactor technology.

INNOVATIVE NUCLEAR FUEL CYCLES

The following actions must be taken if an innovative closed nuclear fuel cycle is to be set up in Russia:

- ❑ establishment of a large-capacity spent nuclear fuel (SNF) storage site;
- ❑ commissioning of an industrial facility to reprocess SNF from VVER-1000 reactors;
- ❑ establishment of an industrial facility to produce fast reactor MOX fuel with the plutonium separated in thermal reactor SNF reprocessing;
- ❑ establishment of a large-capacity radioactive waste (RW) storage site[37].

SNF Storage

By mid-2005, Russia had accumulated 16,000 tons of power reactor SNF; the amount is expected to increase to 24,000 tons by 2015,[38] since 800 tons of irradiated fuel is generated each year.

The spent nuclear fuel facility at the Mining and Chemical Combine (Zheleznogorsk, Krasnoyarsk Krai), which is a wet (pool-type) SNF storage facility with a capacity of 6,000 tons, was commissioned in 1985. The storage facility is designed to maintain SNF submerged in pools of water for a period of up to 30 years. As of December 2006, the storage facility was receiving irradiated fuel assemblies (IFAs) from Russian, Ukrainian, and Bulgarian VVER-1000 reactors and was 81 percent full.[39] Through the construction of new SNF storage shrouds, the capacity of the depository can be increased to 8,600 tons of SNF, extending by 6-7 years the time that it will take to reach facility capacity, i.e. to 2016-2018.[40]

In 2001, the Mining and Chemical Combine in Zheleznogorsk initiated construction of a dry storage facility designed to hold 38,000 tons of SNF, including 27,000 tons from RBMK-1000 reactors and 11,000 tons from VVER-1000s. The storage facility was designed to receive and store SNF for a period of 50 years, after which the SNF would need to be either reprocessed or put into alternative long-term storage. The project will cost an estimated $540 million. The first phase of the complex, storage of 5,000 tons of RBMK-1000 assemblies, is scheduled to be launched in 2008.[41]

SNF Reprocessing

SNF reprocessing began in Russia with the launch of the RT-1 plant at the Mayak Production Association in 1976. The design capacity of the plant is 400 tons of SNF per year. The plant reprocesses SNF from VVER-440 and BN-600 reactors, icebreaker and submarine propulsion reactors, as well as research reactors. The regenerated uranium is used to fabricate fuel for RBMK reactors while the separated plutonium is put into storage.

In 1984, the construction of a second SNF reprocessing plant, the RT-2, was started in Zheleznogorsk. Plans called for the plant capacity to be 1,500 tons of SNF per year, which would permit the reprocessing of irradiated fuel from NPPs (primarily from VVER-1000 reactors) with a total installed capacity of 50-80 MWt. However, for economic reasons and due to the nuclear power industry slowdown, plant construction was halted in 1989 and later frozen.

In the late 1990s-early 2000s, the leadership of the Ministry of Atomic Energy showed great interest to setting up an international SNF storage facility under IAEA safeguards in Zheleznogorsk that would receive international SNF for long-term storage. It was assumed that in the absence of the requisite funding from the national budget, the funds needed to complete construction would come from foreign states wishing to send their SNF to Russia for storage. In order to provide a legal basis for the implementation of the project, amendments were made to existing environmental regulations. In June 2004, the issue was discussed at a meeting of IAEA General Director Mohamed ElBaradei and Chairman of the Russian Federation Government Mikhail Fradkov, as well as at a meeting between ElBaradei and Russian President Vladimir Putin.

Later, in accordance with a proposal put forward by President Putin at a meeting of the Eurasian Economic Community (EurAsEC) on January 25, 2006, the idea of an international storage facility was transformed into an initiative for the establishment of an International SNF Management Center.

The International Center, after it is set up, could perform the following functions:

- ❑ store Russian and foreign SNF until the issue of its reprocessing is resolved;
- ❑ select and improve technologies for SNF reprocessing and RW treatment;
- ❑ reprocess SNF to produce MOX fuel for fast neutron reactors;

- ensure reliable and safe long-term RW storage and disposal.

The initiative for the creation of an International SNF Management Center could also be an important component in a solution to the problem of how to reduce the risk of proliferation associated with the construction of NPPs in countries that to date have no industrial nuclear installations, including Algeria, Egypt, Morocco, Turkey, and the countries of the Persian Gulf. Given their lack of experience in handling large volumes of SNF, along with their *susceptibility* to large-scale terrorist acts, the return of SNF to producers from these states is a particularly urgent issue. Given that the United States does not accept such fuel, sending this SNF to Russia for storage at an International SNF Management Center could prove to be the most effective way to solve the problems related to irradiated nuclear fuel. According to Russian specialists, the creation of an International SNF Management Center requires some $3 billion in investments.[42]

Russia has raised the issue of concluding a bilateral agreement with the United States on cooperation in the sphere of nuclear energy[43] on multiple occasions, since it would provide a legal basis for the possible import of foreign SNF that contains U.S.-origin uranium to Russia. However, the Russian efforts have invariably come up against the political conditions put forward by the United States, particularly a demand that Russia curtail cooperation with Iran in the sphere of nuclear energy. In Russia, these *conditions* for signing the agreement and the attempt to use the SNF imports issue as a *carrot* were viewed quite negatively. In essence, a political decision was made temporarily to lower the priority of this issue.

In addition to political obstacles to the creation of an International SNF Management Center, there are a number of other barriers:

- **Russia's lack of breakthrough achievements in technologies used in the final stages of the nuclear fuel cycle, including innovative methods for SNF processing.** The current aqueous processing technology, PUREX, which is likely to remain the basic technology used by the nuclear industry in the near future, leads to a large volume of liquid radioactive waste (LRW)—some 2,000 m^3 from reprocessing one ton of SNF—and requires improvement. Important areas of future research in SNF handling include installations that use non-aqueous processing methods and increasing the profitability of SNF reprocessing. In 2006, the Mining and Chemical Combine, V. G. Khlopin Radium Institute, and Bochvar All-Russian Scientific Research Institute for Inorganic Materials (VNIINM) initiated an in-depth laboratory study on actual fuel of prospective technologies for SNF reprocessing, with included a reduction in costs for the construction of pieces of equipment and the elimination of certain operations. In future, the Mining and Chemical Combine plans to create a demonstration stand for SNF reprocessing that can handle 50-100 tons/year.

- **The absence of a full technical and economic substantiation for the project.** The most widely reported statistic in the late 1990s on the profitability of an international SNF storage facility—$20 billion—was essentially calculated on the fly in the following way: the entire Mining and Chemical Combine storage facility was designed to hold 38,000 tons, and Russia can devote space to hold 20,000 tons of foreign SNF at the facility; if the cost for one kilogram storage is $1,000, then income will total $20,000.

- **The lack of public support for the project.** This is another important factor, particularly given the many protests over the creation of a less sensitive enterprise from public point of view—the International Uranium Enrichment Center in Angarsk.

Given all of the factors above, the persistence of Federal Atomic Energy Agency head Sergei Kiriyenko should come as not surprise: he repeated three times during a single press conference at the G8 summit in St. Petersburg that Russia currently has no plans to import foreign-origin SNF.

However, one should keep in mind that the question of the construction of an SNF storage facility in Russia is not confined to the political plane, and does not depend on the 123 Agreement signed with the United States. The need to establish an SNF repository in Russia is urgent even

without imports of foreign irradiated fuel, given the plans for large-scale development of nuclear energy in the country and the world, since Russia has traditionally repatriated SNF when it has supplied nuclear fuel abroad.

The Federally Targeted Program "The Development of the Nuclear Industry in 2007-2010 and its prospects till 2015" provides for an entire series of research and development projects related to the establishment of an SNF repository, including work on the development of technical equipment for the transportation of irradiated fuel to a long-term centralized repository, as well as the establishment in 2011-2015 of a center for the refinement of technologies related to long-term SNF storage.

In the technological sphere, Russia is self-sufficient in terms of the basic equipment and technologies needed to establish an SNF repository. The United States, for its part, has fallen considerably behind in the development of SNF handling technologies, since work in this sphere was halted under the Carter Administration in 1977. At the same time, certain related pieces of equipment such as, for example, SNF transport containers, may surpass Russian analogs and could therefore be in demand.

The United States could also help in the development of new SNF handling technologies in Russia by not opposing the import of SNF containing U.S.-origin material into the country. Experts estimate that some 75 percent of all irradiated fuel abroad is under U.S. legal control.[44] Importing foreign-origin SNF to Russia would allow the industry to earn additional funds to develop handling and reprocessing technologies.

The volume of SNF created throughout the history of nuclear energy totals about 250,000 tons,[45] of which 34 percent has already been reprocessed. Geographically SNF is distributed as follows: the 53 percent (83,000 tons) in the United States, 23 percent (36,000 tons) in Western Europe, eight percent (13,000 tons) in Eastern Europe, and 16 percent (24,000 tons) in the Asia-Pacific region and other countries.[46] Each year some 12,000 tons of SNF are unloaded from reactors; about 800 tons of this comes from Russian NPPs.

Recent attempts to implement SNF management programs (for instance, in Japan and the United States) have shown that solving this problem on a strictly national basis requires significant funds and intellectual resources, and even then may not succeed. It should be enough to recall that the cost of the SNF reprocessing plant at Rokkasho (Japan) was $18 billion, but the spent fuel problem has yet to be resolved on a long-term basis.

The new U.S. energy policy of 2001 provides for joint development with foreign states of technologies for the handling and chemical reprocessing of SNF, which should be cleaner, more effective, result in a reduced waste stream, and be more proliferation resistant.

U.S.-Russian cooperation in these areas could help to ensure the effective realization of initiatives aimed at reducing proliferation risks while increasing the competitiveness of the International SNF Management Center, particularly given the coming large-scale development of nuclear energy.

Production of uranium-plutonium fuel

A more serious problem for the transition to a closed nuclear fuel cycle is Russia's lack of industrial plants to produce mixed uranium-plutonium oxide (MOX) fuel for fast reactors. At present, 10 MOX fuel elements per year can be fabricated at Mayak by the *Paket* installation. To load one BN fast-neutron reactor, 400 fuel elements are needed.

It was expected that a French industrial MOX fuel plant would be provided under the U.S.-Russian Plutonium Disposition Agreement on reprocessing 34 tons of weapons-grade plutonium by each country. Russia is ready to cooperate with France on MOX technology, though it would like to focus on fast reactors. However, it is not prepared to use French equipment if it is supplied on *black-box* terms, i.e. without access to the technology.

RW treatment

Treatment of RW generated as a result of the chemical reprocessing of SNF is another unresolved problem. The creation of a facility to store intermediate- and highly active wastes after their solidification is critical. Russia is currently considering two sites for RW storage facilities: the Nizhnekansk Granitoid Massif (Krasnoyarsk Region), located 25 km away from the location of the future dry SNF storage facility, and Krasnokamensk (Chita Region), where there is uranium mining infrastructure and where the ore reserves will be depleted with time.

Here, the experience of those countries that have made significant progress in building long-term RW storage facilities, including Sweden, Finland, and the United States, would be very helpful. In particular, the experience of the U.S. geological storage site at Yucca Mountain could be beneficial to Russian scientists as an underground laboratory is being constructed to study the impact of solidified RW and spent nuclear fuel on granitoid rock and the environment.

The attractiveness of U.S.-Russian cooperation in the development of new SNF reprocessing techniques and innovative approaches to RW treatment can be seen in the enumeration of the promising trends of collaboration between the two countries in the field of nuclear energy that were prepared in accordance with a request of the Presidents of Russia and the United States made at their May 2002 summit in Russia.[47]

CONCLUSION

The 123 Agreement could becom a framework document that creates the legal basis for long-term cooperation between the two countries in the field of nuclear energy. At present, there are practically no in-depth proposals on joint projects, which could begin soon after the agreement enters into force. However, the U.S. adoption of the Global Nuclear Energy Partnership (GNEP) creates a good opportunity for more active U.S.-Russian cooperation on a closed nuclear fuel cycle.

Among the areas of cooperation that, after appropriate due diligence, may be of interest to Russia, the following can be highlighted:

- ❑ Russian commercial nuclear materials supplies to U.S. NPPs;
- ❑ cooperative efforts to improve the efficiency of light water nuclear reactor operations;
- ❑ establishment of an International SNF Management Center in Russia, primarily with revenues from the storage of foreign SNF containing materials of U.S. origin;
- ❑ the development of innovative nuclear reactors with an emphasis on sodium-cooled fast reactors, including the design of new uranium-plutonium fuel for them, as well as high-temperature gas reactors;
- ❑ commercial involvement of U.S. companies in the joint production of equipment for Russian-designed NPPs and supply of some components;
- ❑ implementation of joint NPP construction projects in third countries;
- ❑ joint design of large capacity light-water reactors (1,500 MWt) with passive safety systems;
- ❑ cooperation in the area of improving the safety and physical security of nuclear reactors and other nuclear installations and materials.

The interests of various Russian nuclear industry players in U.S. cooperation are outlined in *Table 1*.

Table 1.

Interests of Selected Russian Enterprises in Nuclear Cooperation with U.S. Businesses[48]

	Reasons for interest in the early conclusion of a 123 Agreement	
Rosatom	Need to establish regulatory framework for long-term nuclear cooperation on a parity basis Nuclear industry's leadership is personally interested in promoting bilateral cooperation in the nuclear industry, despite stagnating U.S.-Russian relations in other fields	
	Areas of Cooperation	**Projects**
Production Companies		
TVEL	Development of innovative nuclear fuel cycle	Construction of industrial uranium-plutonium fuel production facility
TENEX	International sales of nuclear materials free of anti-dumping duties and other restrictions	1. Commercial sales of LEU for use at U.S. nuclear reactors. 2. Import of SNF containing U.S.-origin materials (Taiwan, South Korea, etc.) 3. Establishment of an International Uranium Enrichment Center (IUEC) 4. U.S. political assistance in attracting third countries to participate in the IUEC
Atomstroyexport	Joint NPP construction projects in third countries	Turkey is one of the most promising potential customers
Rosenergoatom	Increased effectiveness of NPP capacity utilization	1. Increasing NPP performance 2. Reducing operating costs
Atomenergomash	Development of NPP equipment construction in Russia	Establishment of joint ventures for the production of large-scale NPP equipment
Nuclear Fuel Cycle Enterprises		
Zheleznogorsk Mining and Chemical Combine	International Center for SNF Management	Permission to import spent nuclear fuel with U.S.-origin materials to Russia
Angarsk Electrolytic Chemical Combine	International Uranium Enrichment Center	Enrichment of materials ordered by U.S. companies
Research Institutes		
Kurchatov Institute	Development of innovative reactors	High temperature helium reactor
N.A. Dollezhal Research and Development Institute of Power Engineering (NIKIET)	Increased safety of operating reactors; Development of innovative reactors	RBMK reactors
Institute of Power Plant Engineering (IPPE)	Development of innovative reactors	Developing a prototype commercial sodium-cooled fast reactor.
Bochvar Institute of Inorganic Materials	Development of innovative reactors	Developing materials for innovative reactors
	Development of elements of an innovative nuclear fuel cycle	Development of pilot plant producing uranium-plutonium reactor fuel pellets

In order for the entry into the force of a U.S.-Russian 123 Agreement 123 to lead to effective interactions between the two countries in the nuclear sphere, **cooperation on an equal and parity basis** must be established. The two countries have almost no experience in this type of cooperation; earlier interactions have either been of a *donor-recipient* nature, or of a *technology seller-buyer* sort under the condition of the financial collapse of Russia's nuclear enterprises.

Another important provision needed for the establishment of effective, long-term nuclear cooperation between the two countries is the **creation of a technological and commercial, but not political basis** for this cooperation. In this regard, the United States should take the question of Russian-Iranian cooperation off the table as it is simply a political barrier to the development of U.S.-Russian nuclear cooperation. The continued U.S. linkage of the *Iranian issue* to bilateral cooperation will most likely limit cooperation to its present level and force Rosatom to reorient itself to cooperation in the area of innovative technologies with scientists from the European Union and Japan, and, in future, China and India.

Further, the United States needs to remove the negative consequences of its past policies, including sanctions against Russian companies for alleged cooperation with Iran in the creation of a nuclear capability (most importantly—against Mendeleyev Russian Chemical-Technological University), as well as artificial barriers to bilateral commercial cooperation, including the removal of anti-dumping limits on the supply of nuclear materials from Russia.

In the long run, the conclusion of a 123 Agreement should have a positive effect on strengthening the nonproliferation regime through the provision of fuel cycle services, alleviating the need for individual countries to develop their own uranium enrichment and SNF reprocessing capabilities. From this point of view, the Russian initiatives on the creation of international uranium enrichment and SNF reprocessing centers are particularly promising. U.S. participation in the former would give political support to the Russian initiative and help ensure that a large number of states participate in the center's work. Were the United States to agree to allow Russia to import SNF containing U.S.-origin uranium, it would help in the creation of an SNF reprocessing center, and also create the prerequisites for ensuring the removal of SNF from countries that do not possess adequate experience in handling it and are located in regions of heightened vulnerability to terrorist acts—the Middle East in particular.

Notes

[1] The author would like to express his gratitude for assistance in the preparation of this study to the following experts: Deputy Director General for R&D of the Dollezhal Scientific and Design Institute of Energy Technologies (NIKIET) Yuri Cherepnin, Member of the Russian Federation State Duma Valentin Ivanov, Assistant to the Director General of the Institute of Physics and Power Engineering State Scientific Center Vladimir Kagramanyan, Director of the Department of Spent Nuclear Fuel of JSC *Techsnabexport* (*Tenex)* Aleksey Lebedev, Professor of the Obninsk Institute of Atomic Energy Viktor Murogov, Deputy Director General of the Bochvar All-Russian Research Institute of Inorganic Materials Pavel Poluektov, Vice President of the Russian Research Center "Kurchatov Institute" Nikolay Ponomarev-Stepnoi, Visiting Research Officer of World Nuclear Association Sergey Ruchkin, Advisor to the Head of the Federal Atomic Energy Agency Lev Ryabev, Head of the Division of Applied Nuclear Energy Problems of the Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE RAN) Ashot Sarkisov, Chairman of the PIR Center Executive Board Roland Timerbaev, Director General of the Institute of Physics and Power Engineering State Scientific Center Anatoly Zrodnikov, as well as PIR Center Project Coordinator Ekaterina Votanovskaya.

[2] This paper was prepared as part of a joint project between the PIR Center and the Center for Strategic and International Studies (Washington, D.C., United States).

[3] This agreement is commonly knows as a 123 Agreement after Section 123 of the U.S. Atomic Energy Act, which regulates U.S. cooperation with foreign states in the nuclear sphere.

[4] The process of concluding such agreements between the United States and other countries previously took from nine months up to several years. The only nuclear-weapons state, which has a bilateral agreement with the United States on nuclear energy cooperation, is China, which signed a 123 Agreement in 1985 (France and the United Kingdom cooperate with the United State under the umbrella of Euratom). Incidentally, this agreement holds a record in terms of the length of the process for coming into force: almost 152 months.

[5] *Atomic Strategy XXI*, September 2004, pp. 31-32.

[6] Anatoly Zrodnikov and Vladimir Ionkin, "Aleksandr Leipunsky and nuclear power systems for space research," *Yadernaya Energetika,* No. 4, 2003, pp. 24-26.

[7] The uranium-235 fuel load is 25 kg, the total mass of the system 1000 kg. See: Nikolai Ponomarev-Stepnoi, Viktor Talyzin, and Veniamin Usov, "Russian Space Nuclear Power and Nuclear Thermal Propulsion System," *Nuclear News*, December 2000, pp. 33-46.

[8] That said, the sensitive components and technological secrets were not available to U.S. experts.

[9] "Nuclear power units," Buran Spaceship website, <http://www.buran.ru/htm/gud%2026.htm>.

[10] Currently there are 31 nuclear power plant units at ten operating NPPs with 23.2 GWt total installed capacity in Russia. In 2005, Russian NPPs produced 152.9 billion kWh of electric power, which amounts to 16 percent of the nation's entire power output.

[11] Center for Public Information of the Russian Research Center "Kurchatov Institute," January 2006, <http://www.kiae.ru/rus/new/nti/ja06.htm>.

[12] World Association of Nuclear Operators website, <http://www.wanomc.ru/wanomc/IMAGES/MENU/MENU3/281,14>, Slide 14.

[13] "Refueling process at reactor unit 1 upgraded at Balakovo NPP," *SaratovBiznesKonsalting*, June 16, 2006.

[14] Plans call for the design service life of VVER-1,000 reactors (1,150 MWt) built under the NPP-2006 project to be 50 years.

[15] "Rosatom has begun to work on the 'NPP-2006' project," IA Regnum, February 21, 2006.

[16] Atommash and Alstom signed agreement on creation of joint venture for the production of steam turbine equipment for Russian-designed NPPs. Production will take place at the ZiO-Podolsk plant. Total investment will be 300 million rubles. PRIME-TASS, April 2, 2007; "*Atomenergomash* holds talks with Alstom and GE on turbine manufacturing," Interfax, November 20, 2006.

[17] "From a crouching start," *Expert-Ural*, May 16, 2006.

[18] "Leading US and Russian power companies agree to set up a turbine manufacturing joint venture," ITAR-TASS, November 30, 2006.

[19] "APCS in projects for the construction of Russian NPPs abroad," *Atomic Energy Bulletin*, May 2006.

[20] "Atomstroyexport's victory in the tender to construct Belene NPP in Bulgaria," Atomstroyexport press service, October 31, 2006.

[21] In total, during a period of 15 years plans call for putting three reactors with a total capacity of 5,000 megawatts into operation.

[22] Plans call for the construction of a prototype reactor in Finland for the Olkiluoto NPP to be completed in 2012.

[23] To date, no reference units with EPR1600 or AP1000 reactors have been built. Construction of one of the former is being conducted at the Olkiluoto NPP in Finland; the United States plans to build one of the latter in China.

[24] Answer of A.V. Yakovenko, official Russian Foreign Ministry representative, to a question from the ITAR-TASS agency regarding the effectiveness of the U.S.-Russian HEU-LEU Agreement. Russian Foreign Ministry Department of Information and the Press Press Release, May 25, 2005.

[25] Mukhtar Dzhakishev, "The Strategy of Dreams," *Economic Strategy – Central Asia*, No. 1, 2006, pp. 68-73.

[26] "In 10-15 Years Russian Uranium Extraction will Grow at Least 5 Times – Deputy Head of Rosnedr Vladimir Bavlov," Interfax, October 26, 2006.

[27] According to the estimates of Russian experts, the existence of USEC as a middleman has cost Russia about $700 million.

[28] Nikolai Chekhovskii, "Kiriyenko's Napoleonic Plans," *Ekspert Online*, September 28, 2006.

[29] Verbatim record of the meeting of Nikolai Spassky, Deputy Director of the Federal Agency for Atomic Energy (Rosatom), Chairman of International Uranium Enrichment Center Committee, with representatives of the Irkutsk Region authorities and NGOs. Angarsk, September 29, 2006.

[30] James Timbie, Presentation at the 2005 Carnegie Nonproliferation Conference, November 8, 2005, <http://www.carnegieendowment.org/static/npp/2005conference/presentations/Black_Markets_transcript.pdf>.

[31] IPPE Director General Anatoly Zrodnikov, "The Initiative of the President of the Russian Federation on the Creation of Global Atomic Energy Infrastructure," report presented at the IAEA International Conference "Management of Spent Fuel from Nuclear Power Reactors," Vienna, June 19-22, 2006.

[32] The Generation IV International Forum was established in 2001 on the initiative of the United States, and brings together scientists from Argentina, Brazil, Canada, China, France, Japan, Russia, South Africa, South Korea, Switzerland, the United States, the United Kingdom, and Euratom to conduct joint R & D and design new fourth-generation reactors. As promising areas for research the following were chosen: sodium-, gas-, and lead-cooled fast reactors; and thermal reactors: very high temperature, molten salt, and supercritical-water-cooled reactors. Plans call for the newly designed systems to be commissioned by 2030.

[33] Fast Neutron Reactors. *Briefing Paper.* # 98, June 2006. http://www.uic.com.au/nip98.htm

[34] A high-temperature gas-cooled reactor will also be able to dispose of weapons plutonium that has been converted into MOX fuel.

[35] "Reactor being created that will destroy dangerous isotopes," RIA OREANDA, October 28, 2006.

[36] ITA Novosti, November 28, 2006.

[37] "The initiative of the President of the Russian Federation to set up a global infrastructure for the nuclear power industry," presentation by A.V. Zrodnikov, IPPE General Director, at the International Conference at the IAEA on Nuclear Power Reactor SNF Treatment, Vienna, June 19-22, 2006.

[38] Artyom Bouslayev, "Discussion of issues in relation to setting up the International NFC Centers," The official website of the Federal Agency for Atomic Energy, July 14, 2005.

[39] Vitaly Khizhnyak. A Tour of the MCC Storages, or the Director Keeps His Promise. *NuclearNo.ru*. December 13, 2006.

[40] Zheleznogorsk MCC to See the SNF Wet Storage Capacity Increased. *Regnum News Agency*. May 2, 2006.

[41] Yuri Revenko on prospects and problems. *IranAtom.ru* information and analysis website, April 13, 2006. <http://iranatom.ru/news/aeoi/year06/april/revenko.htm>

[42] M.I. Zavadskii, "Evaluation of the possibility of establishing an international regional center for SNF management in Russia," presentation at the international conference "Multilateral Technical and Organizational Approaches to the Nuclear Fuel Cycle aimed at Strengthening the Nonproliferation Regime," June 13-15, 2005.

[43] Report by Tekhsnabexport General Director V.A. Smirnov, "An Analysis of the Possibilities for the Conclusion of International Contracts to Import Irradiated Fuel Assemblies of Foreign Origin to the Russian Federation for Temporary Storage and Processing: Status and prospects of the global market for spent nuclear fuel," Second Session of the Special Commission on Questions of the Import to Russian Territory of Irradiated Fuel Assemblies of Foreign Origin, December 15, 2003.

[44] Estimates by Tekhsnabexport, which has been given the right by the Russian government to conclude deals relating to foreign SNF.

[45] Mikhail Solonin, report entitled "The handling of spent nuclear fuel as a factor in the development of nuclear energy," presented at the international conference "Irradiated Nuclear Fuel Management 2002: new initiatives for Russia," September 9, 2002.

[46] Valery Govorukhin, "In ten years the global volume of unreprocessed SNF will nearly double," December 11, 2003, <http://www.tvel.com.ua/news/1543/>.

[47] In a document entitled "Joint Statement by President Vladimir Putin and President George Bush on the New U.S.-Russian Energy Dialogue," the leaders of the two countries requested the creation of a joint expert group on innovative nuclear power technologies. The cochairman of the group from the Russian side was First Deputy Minister of Atomic Energy Lev Ryabev. According to the presidents' statement, a report on possible areas of cooperation in the area of innovative nuclear reactors and the nuclear fuel

cycle was to be prepared within 60 days. A meeting was held in Washington in order to exchange information on areas of R&D viewed as promising. On July 31, 2002, the joint group presented its report to Minister of Atomic Energy Aleksandr Rumyantsev and Secretary of Energy Spencer Abraham. It emphasized the similarities in research areas. A proposal was made to hold meetings on specific subjects and discuss the details of possible cooperation as early as the fall of 2002, if political differences could be overcome (i.e. a 123 Agreement signed).

[48] The author does not intend to list all Rosatom institutes, but only to illustrate the interests of some Russian research institutes in a 123 Agreement.

Alexei Obukhov

NUCLEAR WEAPONS AND CHRISTIAN ETHICS

Since the middle of the 20th century, an unparalleled threat has loomed over mankind—the atom bomb. The revolting escapades of the fundamentalist terrorists can neither obscure nor avert this threat. Of course, there are, apparently, worse threats, such as hidden galaxies that, according to astrophysicists, are moving from the outer reaches of the cosmos towards the solar systems of the Milky Way. But these are the result of cosmic forces, for which the human race cannot be held to account.

The atom bomb is an entirely different matter. The acquisition of a human war-making power that can wipe out earthly civilization in one stroke is a circumstance most extraordinary. On an historical scale, the harnessing of nuclear power—whether for peaceful or military purposes—is, perhaps, the most fateful scientific and technical achievement of the turbulent 20th century. Perhaps Alexander Blok's tragic outlook on the world was not so accidental:

> The twentieth century...Still more homeless
> The gloom of life, still more terrifying;
> Still more black and more enormous
> Falls the shadow of Lucifer's wing.[1]

Up to this point, it had been understood that it was the Creator—the Supreme Being—who was unquestionably responsible for the continuation of life of the human race. In the years before the war, the religious philosopher Sergei Bulgakov wrote:

"Although a person has the opportunity to hasten his own demise through suicide, he does not have the ability to put off its inexorable approach; as for the death of the world, he knows neither the day nor the hour, for it is completely according to the will of the almighty Heavenly Father."[2]

Having created and amassed murderously destructive weapons such as the atomic bomb, mankind arrogated unto himself divine prerogatives, for the destruction of human civilization as a result of nuclear war would be tantamount to Bulgakov's "death of the world"—since we have no reliable knowledge about the existence of intelligent life elsewhere in the universe. The question could be raised: Is a man who is sinful by nature, capable of rationally handling something that has superhuman potential?

TWO PHILOSOPHICAL APPROACHES

During the years that have passed since the invention of nuclear weapons, the public's attitude towards them has been somewhat transformed. At first, many people regarded the nuclear bomb as something exotically menacing, yet at the same time too extravagant to be used in an actual war—the cruel and, to a great degree, politically motivated American bombings of two Japanese cities notwithstanding. Afterwards, people became accustomed to the

nuclear bomb as an unavoidable element of the Cold War between the socialist bloc and the capitalist camp.

Against this background, two contrasting approaches to the nuclear problem emerged: that of the state-minded activists and that of the pacifists. On both sides of the political and ideological front, state-minded activists supported and promoted the nuclear arms race in the interest of national defense. The pacifists, on the other hand, criticized the hydrogen bomb as a weapon of genocide and called for a ban on the use of nuclear weapons, an end to testing them, and, ultimately, nuclear disarmament.

Gradually, as high-ranking politicians became more convinced of the dangers posed by the uncontrolled accumulation of nuclear weapons, elements of the pacifist ideology penetrated the thinking of the state-minded activists as well. This motivated the main rivals in the "bipolar" standoff between the Soviet Union and the United States to begin negotiations aimed at limiting and reducing their nuclear arsenals. The concept of nuclear non-proliferation was thus born, strengthened through an international treaty, and became an important instrument for promoting global stability.

Is the atom bomb something good or something evil? Should we celebrate its invention or should we mourn? Is it possible to form an unequivocal judgment on this matter?

Evidently, this issue cannot be resolved simply by voting. The result of such a referendum, say, among the residents of Hiroshima or Nagasaki would be predictable: it would be negative. This is confirmed by the ceremonies held every year in these cities to commemorate the victims of the dropping of the atomic bombs. Nuclear scientists, however, might see it differently, since they are not prepared to be indiscriminately included among those who visit evil upon human beings.

Not that long ago, Nikolai, the metropolitan of Nizhny Novgorod, found an unexpected facet of the whole nuclear issue when he made an observation about the results of the work done by researchers at the Arzamas-16 nuclear laboratory: "Perhaps it was the prayers of Father Seraphim that helped create the weapons that stood guard over Russia and for the well-being of which Saint Seraphim prayed by the stone in the Sarov Forest."[3]

There is much that is seductive in this argument. In a certain sense it follows the tendency to bolster the authority of the Orthodox Church in Russia. All the same, the inclusion of this postscript referencing a popular saint in the state programs to develop and improve the Soviet Union's nuclear weapons unavoidably raises questions. Something in the depths of one's soul resists lending the aura of sainthood to the atomic bomb, the use of which would usher in Armageddon.

Atomic weapons gave rise to a host of problems in global politics. The moral and ethical contemplation of the phenomenon of the atomic bomb does not allow for simplification. Here, religiously partisan inflexibility interferes with objectivity.

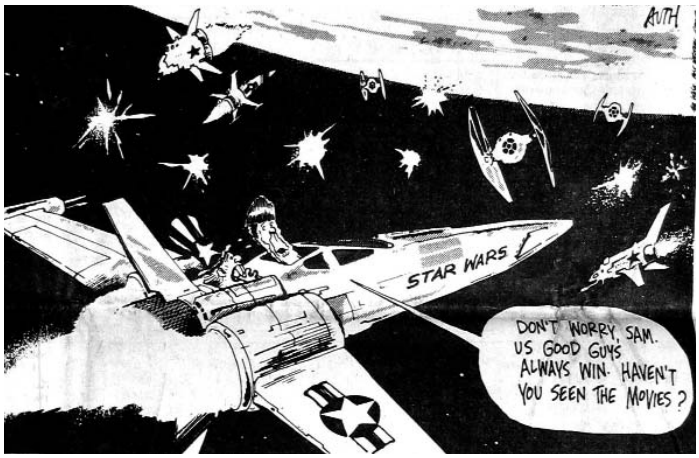
American physicists, who worked on developing the atomic bomb at great personal sacrifice, at first focused on countering the nuclear ambitions of Hitler's Germany, which, fortunately, were never realized. Afterwards, the founding fathers of the United States' nuclear capability provided for the "deterrence" of Stalin's communism. In the Soviet Union, this American activity was perceived in a different light—as a challenge and direct threat to its security; hence, the corresponding motivation of Soviet scientists and weapons designers working at the secret Arzamas-16. Under conditions of extreme political confrontation, the boundary between "good" and "evil," where nuclear weapons were concerned, was interpreted in the United States and the Soviet Union from opposing positions. Simply put, a high moral and ethical purpose was accorded only to the nuclear weapons of one's own nation, while the moral and ethical symbolism served the interests of political propaganda.

Tense discussions about precisely which nuclear weapons—Soviet or American—were a negative influence on the global balance of power were conducted even at the diplomatic level. The following story comes to mind:

When U.S.-Soviet negotiations on nuclear and space-based weapons were renewed during the first half of 1985, the U.S. side tried to show that Soviet heavy ICBMs (a total of 3,000 nuclear warheads) represented a destabilizing element in the nuclear standoff and, conse-

quently, should be the first to be reduced. To counter this approach, the Soviet side called for a reduction that would take into consideration the long-established structures of the strategic nuclear forces (SNF) of the Soviet Union and the United States and would not make it necessary to modify the weapons, given the immense additional expense that this would unavoidably entail. Claims regarding the supposedly destabilizing characteristics of the Soviet SNF were declined by the Soviet delegation.

Echoes of the negotiations' rhetoric reached journalists. A cartoon appeared in the U.S. newspaper *International Herald Tribune* depicting a U.S. *MX* ICBM and a Soviet *SS-18* heavy ICBM as two combatants squaring off. On the casing of the U.S. missile, along with its official designation, *Peacekeeper*, the cartoonist added an inscription saying that it was a noble, peaceful, and even god-fearing weapon. In contrast, the Soviet missile was characterized with particularly negative epithets: evil, aggressive, and inhuman. It's not without reason that its NATO classification is *Satan*.



A cartoon of the times, depicting "good" U.S. "Star Wars" fighters combating the Soviet "evil empire."

During an official UN event, when speaking with his American colleague Ambassador James Goodby, the author showed him a clipping of this cartoon to support his argument. I wanted to re-emphasize the point that one should not use national origin to discriminate between nuclear weapons systems that are comparable from the standpoint of their influence on the strategic situation. The U.S. representative, it seemed to me, recognized a subtle sense of humor in the cartoonist. The discussion surrounding the heavy ICBMs, however, would not subside for many years to come.

"EVIL IS GOOD"

The nuclear bomb did not fall from the sky onto the head of a stunned human race—it was the product of a long race to acquire a superweapon. Politics—and the persistent tendency to resolve emerging international problems with the threat or actual use of force—encourages military and technological rivalry.

Violence and war have been a part of human society since prehistoric times. There was a time when it was fashionable to become caught up with calculating the relative periods of war and their absence in world history. It turns out that peace makes up a very small percentage of the total. In the final analysis, peace and war evidently have always existed side-by-side on planet Earth.

In one of his films, the brilliant filmmaker Stanley Kubrik masterfully depicts the evolution of the tools of armed conflict. Two groups of hairy prehistoric *homo sapiens* are making their way towards one another through a dense thicket of trees. In the clearing a fight between them breaks out over living space. The cavemen gleefully beat each other senseless or to death with whatever comes to hand. Only two combatants remain alive. One of them grabs a nearby white

shinbone—the leftovers of some previous battle—and inflicts the final blow. The victor falls on his back and, in a gesture of triumph, throws his weapon into the sky. Suddenly the bone, circling higher and higher like a bird into the blue sky, turns into a spaceship floating in orbit, as if it were something from "Star Wars."

Today, a number of countries possess weapons of unprecedented power. Mankind has acquired the ability to commit an act of self-annihilation. The worst, however, has not come to pass. Why so?

Proponents of an increase in nuclear might have an unequivocal answer: it is because the countries participating in the military standoff mutually deter one another via intimidation. The fear of the ultimate retaliation is what keeps both sides from resorting to nuclear aggression.

The primary moral deficiency of nuclear weapons—their excessive and indiscriminate destructive force—instills a terror that stupefies even the most cocksure of strategists. It turns out that the moral deficiency of nuclear weapons is not at all a vice, but rather a virtue, inasmuch as it prevents war from erupting. An evil beginning ends up turning into good.

The moral and ethical duality of the atomic bomb was noted at the dawn of the nuclear age by Reinhold Niebuhr, a prominent American theologian and political thinker:

"...the necessity of using the threat of atomic destruction as an instrument for the preservation of peace is a tragic element of our contemporary situation. Tragedy elicits admiration as well as pity because it combines nobility with guilt."[4]

Could the nuclear bomb be considered an eloquent expression of the contradictory and tragic development of human civilization as a whole?

FROM THE PERSPECTIVE OF THE STATE-MINDED ACTIVISTS

The Cold War, which broke out after the defeat of the Axis powers and which essentially represented a systemic, decades-long global crisis in international relations as a whole, was distinguished by an extraordinary increase in tensions in the global arena. This gave rise to acute crises and, occasionally, major wars on the Korean Peninsula, in Indochina, in the Middle East, over Berlin and Cuba, and so forth. The Cold War had numerous components. Its engine was, first and foremost, the political and ideological confrontation between socialism and capitalism.

In the Soviet Union, politicians were displeased by Winston Churchill's Iron Curtain speech that he gave in March 1946 in Fulton, Missouri, with the American president in attendance. It was not entirely clear from the speech of the British prime minister, who, specifically, had lowered the curtain, but, from that moment on, cartoons depicting Churchill in the newspaper *Pravda* were of an exclusively hostile nature. The capitalist west was proclaimed to have "curtained off" the Soviet Union in an attempt to undermine the socialist order. The response of the Soviet leadership came during the 19th Party Congress (1952), at which Stalin declared that the West had thrown overboard the banner of bourgeois-democratic liberties. This was a severe condemnation.

The second, no less significant, component of the Cold War was the tense U.S.-Soviet competition to amass nuclear weapons. In 1945, neither the leadership of the United States, nor that of the Soviet Union, was inclined to contemplate the moral and ethical aspects of the atom bomb. Atomic weapons represented, above all, a new and inescapable dimension of power politics. Matters concerning these weapons were filed away under the heading of "national security," and only a limited circle of highly trusted people had access to the information. Atomic programs were given the highest priority in both Moscow and Washington. Here, ethics were not a consideration—only politics. That's how the state-minded activists thought and acted.

Harry Truman, having assumed the U.S. presidency upon the death of Franklin Roosevelt in April 1945, and disturbed by the Soviet Union's growing international stature as a result of WWII and subsequent geopolitical shifts, was concerned less with the alliance than about confrontation with Moscow. Hence, the discussion that Truman initiated with Stalin at the Potsdam conference in the summer of 1945 in regard to American weaponry that had become unprecedented in its power as a result of the first test of an atom bomb at Alamogordo. The president sought to translate atomic might into the language of diplomatic pressure.

At Potsdam, Stalin, who was warned in advanced by his intelligence services about the impending American test, did not appear to be alarmed. According to Georgi Zhukov, upon returning from a session at the conference, the following exchange occurred among the members of the Soviet delegation: "...Stalin told Molotov in my presence about a conversation he had with Truman. Molotov immediately replied: 'They upped their ante.' Stalin laughed and said: 'Let them. We should talk this over with Kurchatov about working faster.' I understood that he was talking about the atom bomb."[5]

Stalin did not leave any notes for posterity. His death was sudden. His views on the atomic bomb are only known from what was said by the people who knew him.

The former Soviet intelligence agent Pavel Sudoplatov tells about one noteworthy episode. At the end of 1945, a U.S. delegation headed by Secretary of State James Byrnes arrived in Moscow to participate in a session of the Council of Foreign Ministers. The delegation included James Conant, one of the heads of the American nuclear project, as well as Averell Harriman, the U.S. ambassador to Moscow. The American representatives proposed to the Soviet side that they begin to cooperate in the area of atomic energy, and they also offered to share the secrets of the atomic bomb with the Soviets in exchange for a Soviet promise not to produce it. Essentially, this offer was in the spirit of the Baruch Plan that was subsequently put forward and which was rejected by Moscow as being designed to consolidate the American atomic monopoly.

Sudoplatov, who was officially presented to the Americans as Molotov's assistant, recalls: "...On the 22nd of December, at a dinner in honor of the American delegation at the Kremlin, an important conversation took place that I was privy to in my capacity as one of those who was transcribing this conversation in detail. Molotov, commenting on the remarks made by Byrnes and Conant about a possible schedule for transferring data about the U.S. atomic bomb to the Soviet Union, joked: 'Would you, by any chance, like to retrieve from your vest pocket the drawings of the atomic bomb that you brought with you to Moscow?'"

Stalin abruptly cut Molotov off. Even I was astonished by his disrespect towards his comrade-in-arms in the presence of the Americans. I will always remember his words:

"Atomic energy and the atomic bomb—these belong to all mankind, they are not a topic for jokes. I propose a toast to the great American physicists who made this remarkable discovery."[6]

Presumably, Stalin was just as distrustful of U.S. diplomacy. At that moment, however, he evidently had not made up his mind about the conceptual principles that would later form the basis of the "Baruch Plan," and he considered it necessary first to clarify the substance of the American position. The atomic problem was too serious for hurried and superficial thinking. This is why Molotov's joke was neutralized.

Another eyewitness account of Stalin's views on nuclear weapons is provided by Milovan Djilas, who, in early 1948, was a guest at one of Stalin's traditional midnight dinners and recounts the following words of the supreme leader:

"Stalin was speaking about the atomic bomb: 'It is a powerful thing, pow-er-ful!' His words were full of admiration, which let everyone know that he would not rest until he also had this 'powerful thing.' He never mentioned, though, that he already had it, nor that the Soviet Union was already developing it."[7]

In 1949, on the eve of the first Soviet atomic bomb test, Yuliy Khariton, one of the directors of the Arzamas-16 nuclear center, briefed Stalin about the progress that had been made. After his report, Stalin asked: "Would it be possible to build two bombs out of the same amount of plutonium?" Khariton replied that this was impossible. As an experienced weapons specialist, Stalin would delve deep into details. Incidentally, the code for the first Soviet atomic bomb was *RDS-1*, or *Stalin's Jet-Propulsion System-1*. The second one (which was tested in 1951) was coded *RDS-2*. In the West, the Soviet bombs were dubbed *Joe-1* and *Joe-2.*[8]

As is well known, at the dawn of the atomic era, the prominent Danish physicist Niels Bohr, and before him, the Englishman Ernest Reserford, expressed doubts as to whether mankind would ever be able to learn to master the energy of the atom. According to Bohr, in order to do so, the economy of an entire nation would have to be turned into a huge factory working exclusively to develop a bomb.

After 1945, however, due to political expediency, Washington and Moscow would not spare any resource to develop, perfect, and accumulate a nuclear and, subsequently, nuclear missile capability. Going down this road became something of a national idea (obsession) for both countries. Given the military and political confrontation, the concept of deterrence, which was enjoined to prevent nuclear conflict, intensified the nuclear rivalry. The arsenals of nuclear

warheads held by both superpowers numbered in the tens of thousands. Nuclear cataclysm was a very real threat hanging over the world. Herein lay the destructive logic of the Cold War, in accordance with which an instrument of deterrence was converted as a result of the unrestrained race for military superiority into a weapon of nuclear holocaust.

A great deal of effort was spent preventing this slide and detouring world politics towards the limitation and reduction of nuclear weapons. The most important impetus (as well as a consequence) of this change in direction was the weakening and, subsequently, the end of the Cold War.

TOWARDS A PRE-EMPTIVE STRIKE

As has already been noted, another feature of Cold War politics, along with the nuclear arms race, was the irreconcilable ideological rivalry between the world of capitalism led by the United States and the world of socialism as it was personified by the Soviet Union and its allies. The Soviet leadership assumed that the outcome of WWII confirmed the historical principle according to which mankind would progress towards a communist order.

Already in retirement, Molotov, when speaking with Felix Chuyev about the mood of the Kremlin in the post-war period, noted:

"Stalin steered matters towards the death of imperialism and the ascension of communism... We needed peace, but according to American plans, two hundred of our cities were subject to simultaneous atomic bombardment. Stalin's thinking was as follows: 'World War I pulled one country out of capitalist slavery. World War II created a socialist system, and the third world war will put an end to imperialism forever.'"[9]

For Molotov, the main point was the ideological principle, the vision of the historic perspective. But his thinking also implies, as far as one can tell, a victorious outcome for the forces of socialism in the impending nuclear conflict.

Two forces were colliding in the world arena: the American side, which placed its hopes in its monopoly of atomic weapons, and the Soviet side, with its huge conscript army that had demonstrated its effectiveness in combat on the battlefields of WWII. Well-informed politicians were well aware that the time was near when the Soviet Union would have its own atomic weapons.

The combination of both factors—the political and ideological rivalry and the reliance on atomic weapons—made the stand-off between the superpowers particularly explosive.

On the American side, a typical example of ideological intolerance reinforced by atomic ambitions was James Burnham's book *The Struggle for the World*, which was published in 1947, not long after Churchill's "Iron Curtain" speech in Fulton. Burnham analyzed the world situation from two vantage points: from the angle of aspirations to global dominance (here, in his opinion, there were two genuine contenders—the United States and the Soviet Union) and from the point of view of the role that atomic weapons would be able to play in global politics.

Burnham recognized that the atomic bomb represented a mortal threat to mankind. If it became accessible to several nations, war with all its destructive consequences would be inevitable. In order to avoid this, according to Burnham, what is needed is a monopoly on the atomic bomb. Such a monopoly would become possible by establishing a global empire. If it is built by the Soviet Union (to confirm this possibility, Burnham provides detailed diagrams that are intended to show the global scale of Soviet expansionism), then a totalitarian order will emerge. If, however, the United States ends up heading the empire, then it will be about the triumph of democracy.

Burnham demanded that Washington stop vacillating in its foreign policy between isolationism and the appeasement of communism. The doctrine of non-interference in the internal affairs of other nations should also be rejected.

If the Soviet Union obtains atomic weapons, it will deploy them and win victory, warned Burnham. If the United States, however, would stop its foot-dragging and inflict pre-emptive atomic strikes, victory would be theirs. Burnham wrote: "Let us suppose... that when the war begins the Soviet Union does not yet have atomic weapons. Then, of course, there will be no immediate retaliation to the initial mass atomic attack by the United States. This means that the first stage of the war will be a gigantic victory for the United States."[10]

The overall conclusion of Burnham's book was as follows: "The reality is that the only alternative to the communist World Empire is an American Empire which will be, if not literally worldwide in formal boundaries, capable of exercising decisive world control."[11]

Plans for pre-emptive war put forward by Burnham and other American ideologues remained unneeded. Sober-minded politicians in Washington could not fail to take into account that the United States did not have enough war matériel to guarantee that, even with a nuclear monopoly, it could inflict damage on the Soviet Union with impunity. If it started a war, it could lose Western Europe. Then, in August of 1949, the atom bomb appeared in the Soviet arsenal. The KB-11 design bureau at Arzamas-16 had caught up to the Manhattan Project on which scientists at Los Alamos were working.

A TERRIBLE SIN

Another influential school of American political thought put forward recommendations that essentially rejected the dangerous radicalism of the adherents of the pre-emptive use of atomic weapons. To a great degree, this was the tone of George Kennan's article "The Sources of Soviet Conduct," which appeared under the pseudonym "X" in the July 1947 issue of *Foreign Affairs*. In it, Kennan proposes focusing on the containment of communism through primarily political means.

In his memoirs, Kennan characterized the confused state of mind among politicians in Washington in the early post-war years as follows:

"At that time, it was almost impossible to see how Europe could be saved. We were still caught in the fateful confusion.... The economic plight of the continent was rapidly revealing itself as far worse than anyone had dreamed, and was steadily deteriorating. Congress was in an ugly frame of mind, convinced that all foreign aid was "operation rathole." The Communists were at the throat of France. A pall of fear, of bewilderment, of discouragement, hung over the continent and paralyzed all constructive activity. Molotov sat adamant at the Moscow council table, because he saw no reason to pay us a price for things which he thought were bound to drop into his lap, like ripe fruits, through the natural course of events."[12]

While sharing Burnham's displeasure towards "soft-headed liberals," who were inclined towards the "appeasement" of communism, Kennan nevertheless rejected the argument that the Soviet Union was willing to wage war. In his unsent letter to Walter Lippman (1948), he stressed:

"The Russians don't want to invade anyone. It is not in their tradition. They tried it once in Finland and got their fingers burned. They don't want war of any kind. Above all, they don't want the open responsibility that official invasion brings with it. They far prefer to do the job politically with stooge forces."[13]

Given these premises, Kennan explains the meaning of his anonymous article, which ushered in an era in Washington politics:

"In writing the X-Article, I had in mind.... ...the fact that many people, seeing that these concessions had been unsuccessful and that we had been unable to agree with the Soviet leaders on the postwar order of Europe and Asia, were falling into despair and jumping to the panicky conclusion that this spelled the inevitability of a eventual war between the Soviet Union and the United States.

It was this last conclusion that I was attempting, in the X-Article, to dispute. (...) ...I saw no necessity of a Soviet-American war.... There was, I thought, another way of handling this problem.... This was simply to cease at that point making fatuous unilateral concessions to the Kremlin, to do what we could to inspire and support resistance elsewhere to its efforts to expand the area of its dominant political influence, and to wait for the internal weakness of Soviet power, combined with frustration in the external field, to moderate Soviet ambitions and behavior. The Soviet leaders, formidable as they were, were not supermen. Like all rulers of all great countries, they had their internal contradictions and dilemmas to deal with. Stand up to them, I urged, manfully but not aggressively, and give the hand of time a chance to work.

This is all that the X-article was meant to convey."[14]

Thus, Kennan advocated a firm policy of containment of communist expansionism. The U.S. Marshall Plan, which provided financial help to rebuild the economies of Western Europe, and the establishment of the North Atlantic Treaty Organization in 1949, can be considered a practical expression of that policy. At the same time, however, he was not one to toy with the atomic bomb in a threatening manner. Kennan did not advocate moving away from the perspective

of a sharp rivalry between capitalism and socialism, but he was categorically against provoking a military confrontation between the two systems, especially using atomic weapons.

In the years to come Kennan continued to remain faithful to this far from inconsequential attitude of his towards the atomic factor in foreign policy.

Kennan was not alone in his beliefs. In early 1952, at the height of the war on the Korean Peninsula, the influential thinker Reinhard Niebuhr, while heaping criticism on communist ideology and the Soviet regime that America was confronting, and worried about the turbulent political movements in Asia, also warned against relying on military, economic, and technological superiority as a means of altering the course of history.

With obvious sympathy, Niebuhr concurred with the apprehensions towards U.S. foreign policy that had become widespread in Western Europe:

"The fact that the European nations, more accustomed to the tragic vicissitudes of history, still have a measure of misgiving about our leadership in the world community is due to their fear that our 'technocratic' tendency to equate the mastery of nature with the mastery of history could tempt us to lose patience with the tortuous course of history. We might be driven to hysteria by its inevitable frustrations. We might be tempted to bring the whole of modern history to a tragic conclusion by one final and mighty effort to overcome its frustrations. The political term for such an effort is "preventive war." It is not an immediate temptation; but it could become so in the next decade or so."[15]

Like Kennan, Niebuhr advised American leaders not to lose their heads and to wait out the "long run" of history while taking such measures as are necessary to combat the more immediate perils.[16] The United States, according to Niebuhr, "should be ready to engage in a patient chess game with the recalcitrant forces of historic destiny."[17]

Thus, Niebuhr, in contrast to Burnham, warned against unleashing a pre-emptive war against the Soviet Union. The American theologian, incidentally, captured the moral ambivalence towards nuclear weapons. Niebuhr wrote that a nation such as the United States:

"...finds itself the custodian of the ultimate weapon which perfectly embodies and symbolizes the moral ambiguity of physical warfare. We could not disavow the possible use of the weapon, partly because no imperiled nation is morally able to dispense with weapons which might insure its survival. All nations, unlike some individuals, lack the capacity to prefer a noble death to a morally ambiguous survival. (...) Yet, if we should use it, we shall cover ourselves with a terrible guilt. We might insure our survival in a world in which it might be better not to be alive."[18]

DOUBTS IN SCIENTIFIC CIRCLES

Doubts about the moral and ethical legitimacy of atomic weapons as a means to achieve political ends began rather early to worm its way into the souls of American theoretical physicists.

At first, everything in this regard had been going smoothly—working in the atomic field to overtake Nazi Germany did not raise any concerns. The very idea of the potential for an atomic monopoly in Hitler's hands spurred a redoubling of efforts. The situation began to change when the possibility of using the atomic bomb against Japan surfaced.

In the summer of 1945, while employed by the Los Alamos laboratory, Edward Teller, at the behest of Leo Szilard (who at that time was working at the University of Chicago), attempted to organize a petition of scientists to call upon the Truman administration to reject the notion of bombing Japanese cities, citing humanitarian considerations and the lack of an obvious military necessity. When the head of the Manhattan Project, Robert Oppenheimer, found out the nature of the document that Szilard was behind, he strongly resisted the initiative, indicating that the issues surrounding the use of nuclear weapons had to be decided exclusively by politicians, who have the trust of voters and who, in their actions, rely on being well-informed about the numerous factors inaccessible to the general public. Teller backed down, acknowledging the cogency of Oppenheimer's arguments.

The doubts were revived when information about the aftermath of the bombing of Hiroshima on August 6, 1945, reached Los Alamos. Teller recalls:

"The colloquium that week was a viewing of the early pictures showing the destruction of Hiroshima. I remembered Szilard's suggestions; the scenes were particularly troubling and I wondered whether such devastation had been necessary. Then, just three days later, on August 9, 1945, the plutonium bomb was dropped on Nagasaki. I remember telling Laura Fermi, 'If this goes on, I want to leave.' But then, on August 14, the big news arrived: Japan had surrendered! The war was over. Celebrations, elation, and relief continued until late in the night. And I was fully as glad as everyone else. But I continued to regret that the bomb had not been demonstrated."[19]

In Teller's opinion, a nighttime explosion at a height of 10 kilometers over Tokyo Bay would have been sufficient to induce the requisite psychological effect, convincing the Japanese of the futility of resistance while, at the same time, sparing an inordinate number of victims. During the late 1940s and early 1950s, the work that had begun in earnest to develop the hydrogen bomb provoked a new round of discussion in the United States with respect to the moral legitimacy of nuclear weapons. Teller and several other prominent American scientists had no reservations about the issue. No restraint on the part of the United States in this, they believed, would stop corresponding Soviet programs. Moreover, the United States could not allow itself to fall behind militarily without risking its national security interests.

There was, however, discord over this approach. Hans Bethe managed to avoid moving to Los Alamos to take part in the work on the hydrogen bomb. A secret report of the General Advisory Committee, signed by James Conant and Robert Oppenheimer, among others (although not by Glenn Seaborg, who adhered to a different point of view), contained a warning against developing the hydrogen bomb in view of its "limitless destructive power and the danger that it might become a 'weapon of genocide.'" A separate report signed by Enrico Fermi and Isidore Rabi laid out similar views.[20]

In March 1950, Albert Einstein expressed the anxiety of this group of scientists in an article entitled "Arms Can Bring No Security":

"The armament race between the United States and the Soviet Union, originally supposed to be a preventive measure, assumes a hysterical character. On both sides, the means to mass destruction are perfected with feverish haste behind the respective walls of secrecy. The H-bomb appears on the public horizon as a probably attainable goal. Its accelerated development has been solemnly proclaimed by the President. If successful, radioactive poisoning of the atmosphere, and hence annihilation of any life on earth, has been brought within the range of technical possibilities. The ghostlike character of this development lies in its apparently compulsory trend. Every step appears as the unavoidable consequence of the preceding one. In the end, there beckons more and more clearly general annihilation."[21]

Essentially the same doubts roiled the minds of leading Soviet physicists.

In 1955, after the first comprehensive test of a Soviet hydrogen bomb, the leaders of the atomic project—academicians Kurchatov, Alikhanov, Aleksandrov, and Vinogradov—sent a letter to the party leadership saying that, with the development of superweapons, a world war becomes impossible. It would lead to the destruction of mankind and, therefore, a new kind of international politics was necessary. Malenkov supported this pacifist letter, while Khrushchev took advantage of his party comrade's political shortsightedness to overthrow him.[22]

The introduction of pacifist or, better to say, common sense perceptions into the realm of the state-minded activists did not always go smoothly. A typical episode is provided by academician Andrei Sakharov in his memoirs. After the aforementioned successful test of a hydrogen bomb at the Semipalatinsk Test Site in November 1955, the participants of that event were invited to a reception with the inner circle of Marshal M. I. Nedelin, the Commander in Chief of the Rocket Forces. Sakharov recalls:

Nedelin nodded to me, inviting me to propose the first toast. Glass in hand, I rose and said something like: "May all our devices explode as successfully as today's, but always over test sites and never over cities."

The table fell silent, as if I had said something improper. Everyone froze. Nedelin smirked and he, too, arose glass in hand and said:

"Allow me to tell a parable. An old man wearing only a shirt is praying before a lit icon: 'Guide and harden me, guide and harden me.' His old wife, who is lying on the stove, can be heard to say: 'Just pray to be hard, old man, I can guide it in myself.' Let's drink to getting hard."

The Marshal's parable was not meant to be a joke. Nedelin considered it necessary to rebut my unseemly pacifist sentiment and to put me and anyone else who might be thinking along the same lines in our place. The point of his story (half lewd, half blasphemous, which made it even more unpleasant) was clear to me and everyone else. We—the inventors, scientists, engineers, and craftsmen—had made a terrible weapon, the most terrible weapon in human history; but its use would lie entirely outside our control. The decisions—'the guiding,' in the words of the parable—would be made by them—those who were at the top, the top of the Party and military hierarchy.[23]

The situation was practically identical to the argument between Teller and Oppenheimer at Los Alamos in 1945, with Nedelin playing the role of Oppenheimer.

Global public opinion did not remain indifferent to the militarization of international politics and the increasing nuclear danger, setting in motion a broad movement for peace. Together with leading scientists, politicians, artists, and social activists, representatives from churches of various denominations played a highly visible role in this movement.

In concert with this initiative, Soviet diplomacy started campaigning for a multilateral agreement that would lead to the incremental banning and destruction of nuclear weapons under international supervision.

Within the context of the Cold War, these proposals seemed propagandistic to many. It is possible that, to a certain extent, they were, but at the same time, this was propaganda that was for peace and against nuclear war and nuclear blackmail. It played a positive role by showing that the threat of nuclear war could be categorically eliminated only with the complete and total destruction of nuclear arsenals.

It became necessary, however, to further escalate the arms race, set off what was known as the *kuzkina mat,* a bomb with an explosive yield in the dozens of megatons, and, in October 1962, to endure the acute Cuban missile crisis in order for politicians to finally understand the necessity to pull back; to not build up, but rather to limit and reduce nuclear arms for the sake of their own security and international stability.

A LESSER EVIL

The mechanism of nuclear deterrence is an outcome of the politics of confrontation typical of the Cold War years. To no less a degree, however, this concept was an almost unavoidable product of the existence of nuclear weapons in the hands of two or more nations. The nuclear bomb in the hands of another country is too terrifying a weapon not to see it as a potential threat to your own security. Therefore, if, for example, there are two nations, each having a nuclear deterrent arsenal, a situation of *mutual* deterrence automatically arises between these two nations.

Nevertheless, apparently following Soviet tradition, Russian military doctrine avoids using the term "mutual" in this context. At any rate, insofar as it applies to U.S.-Russian nuclear deterrence, this would seem to be an objective, existential given.

At some point around the early 1960s, the concept of "mutual assured destruction (MAD)" became the most important element of the system of nuclear deterrence. This is the punishment that the participants in deterrence promise to each other in the event of the outbreak of nuclear war. This mutual threat deters them from aggression—peace, i.e. nuclear stalemate, reigns.

The corresponding government agencies assiduously worked to ensure that the promised destruction would be virtually guaranteed. At some point, U.S. Secretary of Defense Robert McNamara, declared the precise levels of destruction necessary to ensure such guarantees. For his part, the systems theorist Herman Kahn presented detailed analyses of the extent of the damage that would be inflicted by either the Soviet Union or the United States depending on the number of nuclear explosions on their territory. Eventually, the "futurology of nuclear war" all but developed into a specialized branch of political science.

Within the framework of deterrence, the absence of war is predicated upon the threat of mutual nuclear destruction, i.e., the balance of terror, which, in and of itself, creates serious complications for anyone who would attempt to evaluate the mechanism of deterrence from the standpoint of Christian ethics. Perhaps, as a consolation, an argument could be made for

choosing the lesser of two evils: nuclear war is bad, yet peace guaranteed by MAD, while not ideal, is vastly better than war. It was not without reason that, in 1646, the staunch adherent and interpreter of Christian morality and classical jurist Hugo Grotius noted: "...When it is impossible to avoid making a choice, then the lesser evil replaces good."[24]

IS DETERRENCE SUSTAINABLE?

The question arises: how sustainable is nuclear deterrence? Is it possible to rely, with complete assurance, on this mechanism to keep the peace?

The ideology of deterrence in its current form is supported by many theoretical arguments, from concrete military calculations to the strictly psychological. Deterrence is counted on to influence the behavior and perception of reality among certain people (government leaders and their military subordinates), who, at the same time, are of sound mind and not subject to influence by various fanatical factions. In a world vulnerable to irrational motives, the logic of deterrence evaporates. Admittance to the club of nuclear deterrence has to be closed to extremists.

One central tenet is the concept of the credibility of deterrence. In order for the hand of a putative enemy to be stayed from trying to reach for the nuclear button, he has to be aware that the potential victim of his aggression possesses enough military power to inflict irreparable damage in an unavoidable retaliatory strike. But that, in and of itself, is not sufficient. Deterrence is only truly credible if a potential aggressor knows that the intended victim of his attack has the determination to unleash his nuclear power in retaliation. The concepts of credibility and determination are linked within the framework of deterrence strategy.

Having the necessary will is not a trivial matter. It is possible to be confronted with a serious dilemma such as reconciling oneself, on the one hand, to the loss of major targets on one's territory as a result of an enemy nuclear missile attack or, on the other, to give the "o.k." to a retaliatory nuclear salvo with the realization that this will result in total nuclear collision. These are precisely the options afforded by the "nuclear suitcase," which is always close at hand among the top officials of the nuclear superpowers. As noted in a report issued by the Scowcroft Commission (1983):

"Deterrence is not, and cannot be, a bluff. In order for deterrence to be effective we must not merely have weapons, we must be perceived to be able, and prepared, if necessary, to use them effectively against key elements of Soviet power."[25]

Different methods and channels are used in order to communicate to a probable opponent that the will (or readiness) to resort, under certain conditions, to the use of one's nuclear arsenal for the purpose of retaliation does indeed exist.

The most obvious and public of these is the announcement of various military and political doctrines. In the United States, examples of this are the doctrine of "massive retaliation" (1954) and the doctrine of "flexible response" that replaced it (1961), which is still in effect in one form or another to this day.

Incidentally, the demise in the concept of "massive retaliation," which implied a powerful nuclear strike against particular sites targeted by the United States, was largely connected, according to some critics of this posture, with the loss of the credibility of this threat in the eyes of the presumed enemy. It Implied that the United States was prepared to respond with the massive use of nuclear weapons to an even somewhat minor threat to its interests. When the United States had overwhelming military superiority, such intimidation could be counted on to be fruitful. However, as the U.S.-Soviet nuclear balance reached a state of equilibrium due to the successful military build-up in the Soviet Union, it became impossible to count on victory in a nuclear conflict. Critics in the United States began to say that "massive retaliation" represented either an empty declaration or an absence of policy, i.e., in the practical sense, a concession of defeat. It is difficult to make the decision to confront one's enemy if the only possible response—massive retaliation—would mean total catastrophe.

The doctrine of "flexible response," which called for a graduated response to a perceived threat (in other words, depending on the extent of the danger confronting the United States),

was called upon to confirm Washington's willingness to resort to nuclear weapons if there was no other alternative. It was presumed that pushing the nuclear button as a retaliatory response, knowing that this would not be the end of the world, would then be much easier. "Massive retaliation" was not eliminated—it became a component of "flexible response" in the event of the most extreme circumstances.

It is noteworthy that one of the arguments against the doctrine of "massive retaliation" was the idea that nuclear weapons, due to their enormous and indiscriminate destructive power, destroyed the relationship established by Carl von Clausewitz between war and politics. This argument stressed that nuclear war could not be a means of achieving rational political objectives, inasmuch as it would only lead to total destruction. The emergence of the doctrine of "flexible response," which features both options—"massive retaliation" and "limited nuclear war"—represented an attempt to reestablish and apply Clausewitz' dictum to nuclear weapons. If we are speaking about an exchange of only a limited number of nuclear strikes, then why not, in keeping with Clausewitz, consider such a war as a continuation of politics by other means? The truth, though, is that there is still the terrible danger of a "limited" nuclear war becoming an all-out nuclear war, and then the precept of the German theoretician would be destroyed along with civilization. In this case, however, another possibility could help—maintaining the stability of deterrence after the commencement of combat operations. In other words, the nuclear duel, once begun, could be "theoretically" contained.

It should be noted that the concept of MAD, which is closely tied to the massive use of nuclear weapons, excludes the concept of victory in a nuclear conflict, which cannot be said about a controlled, i.e. limited, nuclear war. Here the emphasis is placed on a variant where one opponent will back down and not want to ascend further up the ladder of escalation, and he will be the loser.

All things considered, the objective of ensuring the credibility of American deterrence is served by the appearance, from time to time, in the general and scientific press, of information about the compilation, deep inside the Pentagon, of lists of targets on Russian territory that would be subject to nuclear strikes in the event of war (the same practice existed in relation to the Soviet Union). A special agency—the Joint Strategic Target Planning Staff—is responsible for this, and its duties include developing plans for conducting nuclear war in accordance with the political directives issued by the secretary of defense and the Joint Chiefs of Staff. This practice is in complete accord with the philosophical premise of Herman Kahn in his groundbreaking work *On Thermonuclear War*: "Usually the most convincing way to look willing is to be willing."[26] One question remains, however: is there a fundamental difference between a procedure for selecting targets for the requirements of deterrence and using the same procedure to prepare for actual military operations? This provides reason for certain Russian authors to accuse the Pentagon of a lack of sincerity.

Thus, if you want nuclear peace—prepare for war. And proclaim it loudly. Otherwise, nuclear deterrence loses its force and becomes feeble and ineffectual.

At times, deterrence requires noisy and threatening propaganda.

There was speculation about the possibility of using American nuclear weapons in Korea and Indochina. During the 1973 war in the Middle East, there were announcements in Washington that nuclear forces had been placed on combat alert. In the spring of 1999, events associated with the start of the NATO bombing of Yugoslavia awakened public nuclear activism in Russia. State-run television ran a broadcast segment in which the then-chairman of the State Duma, Gennady Seleznev, held a direct phone conversation with the commander of a missile base outside of Moscow, during which they discussed the status of targeting U.S. facilities with Russian missiles. This was unprecedented since, even during the darkest years of the Cold War, nothing like this would have been shown on television. A few days later, President Boris Yeltsin, then in China, unexpectedly confirmed Russia's robust nuclear capacity in the presence of television journalists.

Are not politicians taking on far too much responsibility by resorting to nuclear saber-rattling in order to convince their opponent in the international arena? It would seem that, by relying on this approach, one should not lose sight of the fact that the nuclear bomb is fundamentally different than the conventional one. The new weapon does not fit into the old political and diplo-

matic packaging. The risks are enormous. One would think that the nuclear argument is applicable only when real and basic national interests are at stake. Otherwise, everything might end in a catastrophic conflict over something trivial or in a bluff.

Nuclear deterrence generates a certain degree of stability, but, clearly, far from total stability. A number of indicators show that this stability is quite relative.

From the standpoint of its reliability, the system of deterrence has some weak points. One of them is its dependence on the functionality of its computer systems. A launch initiated by a signal from a national MEWS warning of an incoming enemy missile attack could, if it turns out to be a false alarm, be the first act of war. One is converted unwittingly from a defender into an aggressor. Furthermore, there will be virtually no one around to analyze the outcome of the conflict. And does is really make a big difference what the cause of the nuclear exchange was: a flock of wild geese that the electronic warning system mistook for an enemy missile salvo, or an actual nuclear attack, against which it would be impossible not to retaliate. The result is the same—nuclear desert, with its last flames flickering from beneath toxic ash and ruins.

In an article on the workings of nuclear deterrence written in the mid-1980s, the U.S. observer Norman Cousins, attempting to make sense of these issues, noted that, during the period from 1981 to 1985, the screens of U.S. military computers displayed warnings of a possible missile attack against the United States more than 100 times. Fortunately, there was enough time to determine that these were false alarms. Cousins writes:

"Since there is no reason to believe that Soviet computer technology is superior, it becomes necessary to recognize that erroneous blips have turned up on Soviet computer screens. But America's very success in placing missile launching platforms close to Soviet borders has reduced the time available for Soviet experts to check for possible computer errors. For example, American Pershing-2 missiles are less than ten minutes away from major Soviet targets. Since that may not provide enough time to rule out the possibility of computer error, Soviet decision-makers may have to bet the life of their nation on guesswork. That puts not just Soviet and American citizens but all the world in jeopardy because of computer error or malfunction. The presence of Soviet submarines with missile launchers not far off America's coasts has a similar effect on American defense strategy."

In Cousins' opinion, it is far from clear how it would be possible to differentiate a real attack from an act of provocation undertaken by a third party, for example, from a submarine for the purpose of starting a nuclear war between the Soviet Union and the United States:

"A third party that thinks it is in a position to profit from a war between two other nations could conceivably launch its missile at one or the other, thus setting off a nuclear chain reaction. Theoretically, the U.S.-Soviet hot line is designed to guard against such a possibility. But there is an absurdity in the theory. The United States has spent hundreds of billions of dollars to defend against the possibility of a surprise attack; the underlying assumption is that a surprise attack is not just a realistic possibility but the most likely one in the event that an enemy should decide on war. One can readily imagine the 'Alice in Wonderland' quality of a telephone call made in expectation of learning the truth if, indeed, the receiving party actually launched the attack."

Cousins also warned about the dangers of sabotage:

"Elaborate precautions have been built into the system to protect against irresponsible individual pre-emption of decision-making. Each member of the four-man team attached to a silo has a quarter of the key required to activate the missile. Even if one man should go berserk and try to dispatch a missile, the other three would stand in the way. Unfortunately, the system is not foolproof. It does not protect against the possibility of a conspiracy among all four members, or of one or more members overwhelming the others."

Cousins reaches the conclusion that

"Most likely, however, a nuclear war would erupt without anyone having a clear idea of what went wrong. Human scientific genius has created the ultimate irrational situation in which the conditions of life could be shattered beyond recognition or repair, with the survivors, such as they are, left to guess how it all started."[27]

This is similar to a maxim that appeared in Hugo Grotius' epochal work:

"Of the two, who took up arms with righteousness is unknown."[28]

The extremely limited time available for a rational and fully justified decision in a crisis situation is shown by an analysis of the concept of nuclear deterrence undertaken by Alexei Arbatov on the pages of the Russian press:

"…The leadership will act based on the reports of subordinates and their assessment of the situation, the re-evaluation of which, or the abandonment of previously developed operational plans, would be possible only by taking the chance that a retaliatory attack would not take place at all. Essentially, the role of the leadership is reduced to a formality, to the reaction of a trained monkey that pulls a lever to get a banana when it sees a light go on.[29]

The risks inherent in deterrence rapidly increase when, instead of a bi-polar nuclear confrontation in the global arena, there emerges a nuclear multi-polarity despite the principles of non-proliferation. It would be ill-advised to rely on the technical imperfections of the bombs and missiles possessed by the newest members of the nuclear club. The growing arsenals of India and Pakistan are stark evidence of this.

This means that the peacemaking potential of nuclear weapons is hardly without reproach. Nuclear weapons in and of themselves are double-edged and fraught with global catastrophe. Hope should be placed on sober thinking, good will, and the psychological stability of politicians and their closest aides, who have control over offensive nuclear arsenals. This is, of course, impossible to pull off without the appropriate technology, despite all its flaws.

ON NUCLEAR "DELUSION"

The Cuban Missile Crisis and having to deal with its aftermath was a harsh lesson for politicians, but the Cold War was not ended by this burst of nuclear danger. The arms race continued.

Nevertheless, a breach emerged in the edifice of the Cold War—the opposing sides, in their efforts to preserve national security and strengthen international stability, began to search for ways to reach agreements designed to reduce military rivalry. As a result of these initiatives, the Limited Test-Ban Treaty (in the atmosphere, outer space, and under water) was signed in 1963. A major breakthrough was the signing of the Nuclear Non-Proliferation Treaty (NPT) in 1968.

The U.S.-Soviet negotiations on strategic weapons—both offensive and defensive—that were begun in November of 1969 constituted a new page in the effort to place real limits on nuclear arsenals. Within the framework of these negotiations, the following agreements were prepared and signed during the Soviet-American summit in Moscow: the Anti-Ballistic Missile Treaty, which was of unlimited duration, and the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms. Then came another step forward. In 1979, at the summit in Vienna, Leonid Brezhnev and President Jimmy Carter signed the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Strategic Offensive Arms (SALT-II). This historic achievement was accompanied by a reduction in international tensions, which came to be called the policy of detente.

However, in the late 1970s and early 1980s, all of this seemed to start unraveling, beginning with the prolonged Soviet occupation of Afghanistan. In 1980, the Democratic administration of President Jimmy Carter approved Directive PD-59, which called for ensuring an adequate nuclear response along the entire spectrum of possible Soviet aggression. Various options for waging war against the Soviet Union using nuclear weapons were publicly discussed in the United States. A massive nuclear strike was not ruled out. In the spring of 1983, with the Republicans already in power, President Ronald Reagan announced a program for developing an extensive anti-ballistic missile defense system known as the Strategic Defense Initiative (SDI).

In late August-early September 1983, a war of words broke out over the downing by Soviet air defenses of a South Korean airliner that had strayed into Soviet airspace in the Far East. In November of that same year, the United States began to deploy its medium range missiles in Europe within a 10-minute flight time to Moscow. The Soviet Union announced countermeasures and the suspension of its participation in the Geneva talks with the United States on nuclear-related matters. An oppressive atmosphere of war hung over the world.

During this period of a renewed militaristic outlook in Washington, the voice of the old man of American political science—George Kennan—rang out loud and clear. He condemned the escalation of nuclear hysteria. In the second edition of his book *The Nuclear Delusion: Soviet-*

American Relations in the Atomic Age, which came out in 1984 and which included his public appearances from 1950 on, Kennan says that, as early as 1946-1947, when he was a top official at the American National War College, he began to find himself "instinctively rejecting the suggestion that the nuclear weapon should ever again play a serious part in American strategy." The use of the atomic bomb against Japan was viewed by Kennan as "a regrettable extremism."[30]

In 1949, immediately after the first test explosion of an atom bomb in the Soviet Union, the issue of developing the hydrogen bomb was raised in the United States. In January 1950, at the end of his three-year service with the State Department's Policy Planning Staff, Kennan sent a memo to the attention of Secretary of State Dean Acheson. In this memo, which he considered the most important of his career, Kennan came out with a recommendation to renounce the first use of nuclear weapons, reach agreement with other nations to ban their use, and investigate the possibility of establishing international control over them.

By all accounts, Acheson did not circulate this document. The subsequent decision by the U.S. administration to begin developing the hydrogen bomb compelled Kennan to quit government service, but not for good, as would become clear.

With his unique polemical temperament, Kennan drew attention to the negative aspects of American political life at the juncture of the Carter and Reagan administrations. Kennan especially objected to the deliberate search for an external enemy and the increased use of chauvinistic language. These tendencies, in the opinion of the American historian and thinker, were fraught with false judgments, which, in turn, could lead to dangerous behavior. Kennan writes:

"Observing then, in the years of the late 1970s and early 1980s, the seemingly inexorable advance of this hysteria of professed fear of and hostility to the Soviet Union, but finding so little objective reason for it, I could only suspect that its origins were primarily subjective; and this seemed to me to suggest something much more sinister than mere intellectual error: namely, a subconscious need on the part of a great many people for an external enemy—an enemy against whom frustrations could be vented, an enemy who could serve as a convenient target for the externalization of the evil, an enemy in whose allegedly inhuman wickedness one could see the reflection of one's own exceptional virtue. Perhaps all this was not unnatural in the light of the frustrations and failures American society had been suffering at that time: such things as Vietnam; the inexplicable student rebellion; the hostage crisis; inflation; growing and uncontrolled crime and pervasive corruption and cynicism of every sort in our own country; a feeling that the development of our society was out of control. But such states of mind, more often subconscious than consciously experienced, were powerful and insidious ones. They offered great temptations to the politician anxious to avoid involvement with the bitter internal issues of the day and eager to reap, instead, the easy acclamations usually produced in our society by a vigorous ringing of the chauvinist bell. And the moods that they produced—the sweeping militarization of the American view of East-West differences; the assumption of deadly and irreconcilable conflict; the acceptance of the likelihood, if not the inevitability, of a Soviet-American war; the contemptuous neglect of the more favorable possibilities—these, and the official behavior that flowed from them in the halls of government, seemed to me to represent a situation of immense, immediate, and—what was most tragic—quite unnecessary danger."[31]

In Kennan's judgment, the main threat, which was unprecedented in its scale, was hidden in the continuation of an uncontrolled nuclear arms race. Nothing good could come of the atmosphere of mutual accusation and suspicion that existed in relations between the Soviet Union and the United States. In these circumstances, Kennan admonished, "anything could happen."[32] In May 1981, during a speech given upon receiving the Albert Einstein Peace Prize, Kennan emphasized:

"Adequate words are lacking to express the full seriousness of our present situation. It is not just we are for the moment on a collision course politically with the Soviet Union, and that the process of rational communication between the two governments seems to have broken down completely; it is also—and even more importantly—the fact that the ultimate sanction behind the conflicting policies of these two governments is a type and volume of weaponry which could not possibly be used without utter disaster for us all."[33]

"To my mind," said Kennan, "the nuclear bomb is the most useless weapon ever invented."[34] It is necessary to drastically reduce the stockpiles of this weapon; according to Kennan's calculations, 20 percent of the existing nuclear arsenals would be sufficient for deterrent needs. As a first step, it would be possible to proceed with an immediate 50-percent reduction in all types of nuclear arms, including delivery systems, while monitoring through national technical means.

In 1981, Kennan reaffirmed his appeal to government officials in Washington to renounce the first use of nuclear weapons out of a sense of simple foreboding—any deployment of nuclear weapons on the battlefield would be fraught with the danger of escalation.[35]

Kennan's opposition to nuclear weapons was imbued with a distinctive moral and ethical tone:

"For this entire preoccupation with nuclear war is a form of illness. It is morbid in the extreme. There is no hope in it—only horror. It can be understood only as some form of subconscious despair on the part of its devotees—some sort of death wish, a readiness to commit suicide for fear of death—a state of mind explicable only by some inability to face the normal hazards and vicissitudes of the human predicament—a lack of faith, or better a lack of the very strength that it takes to have faith, as countless of our generations have had it before us.

I decline to believe that this is the condition of the majority of our people. Surely there is among us, at least among majority of us, a sufficient health of the spirit, a sufficient affirmation of life, with all its joys and excitements and all its hazards and uncertainties, to permit us to slough off this morbid preoccupation, to see it and discard it as the illness it is, to turn our attention to the real challenges and possibilities that loom beyond it, and in this way to restore to ourselves our confidence in ourselves and our hope for the future of the civilization to which we all belong."[36]

Such was Kennan's reaction to the widely publicized discussions in the United States—in Congress and on television—about the adoption during the last months of the Carter administration of the doctrine of "countervailing strategy," which represented yet another modernization of the doctrine of "flexible response." It should be said that sometimes the high-level participants of those debates could not help but admit that the strategic logic was leading them into territory that was far removed from common sense. An example of this would be an excerpt from the hearings on the question of the "doctrine of countervailing strategy" held by the Senate Foreign Relations Committee on October 16, 1980:

"Secretary Brown. I am saying we keep all the options open and they [the Russians - *author*] should not think that we would give no response, because we have no credible response.

Senator Glenn. I get lost in what is credible and not credible. This whole thing gets so incredible when you consider wiping out whole nations, it is difficult to establish credibility.

Secretary Brown. That is why we sound a little crazy when we talk about it.

Senator Glenn. That is the best statement all the day."[37]

Evidently, wandering about in the maze of nuclear-political philosophy willy-nilly forces one, to quote Herman Kahn, "to think about the unthinkable." Moreover, the Christian conscience, Kennan emphasized, recoils at the thought that nuclear weapons would condemn massive numbers of peaceful citizens, in no way connected to the combatants, to death and suffering. Even worse, Kennan continued, nuclear strategists consider it completely acceptable to use innocent people as hostages to be sacrificed, if needed, as punishment for certain unacceptable actions of their governments.[38]

According to Kennan, the main sin of nuclear weapons is that their widespread use would inflict irreparable damage on mankind:

"Even trifling with the nuclear weapon, as we are now doing, we are placing at risk the entire civilization of which we are a part."[39] "Who are we then", inquires Kennan, "to place under the threat of destruction the entire environmental framework in which, according to God's will, human life should proceed? Is it not a direct violation of the Biblical injunction to honor one's parents and forebears to be ready to place at risk the achievements of the cultural past, which would inevitably perish in the flames of a nuclear war?"[40]

Kennan reaches the conclusion that:

"*...the readiness to use nuclear weapons against other human beings*—against people whom we do not know, whom we have never seen, and whose guilt or innocence it is not for us to establish—and, in doing so, to place in jeopardy the natural structure upon which all civilization rests, as though the safety and the perceived interests of our own generation were more important than everything that has ever taken place or could take place in civilization: *this is nothing less than a presumption, a blasphemy, an indignity—an indignity of monstrous dimensions—offered to God*!" [emphasis added by the author.][41]

NUCLEAR WEAPONS AND SAINT SERAPHIM

The nuclear problem is our Cold War legacy. The sharp ideological and political confrontation of that era, it would seem, has receded into the past, but the nuclear topic is far from being a dead political issue.

In 2003, the nuclear weapons problem revealed itself in an unlikely way during the commemoration of the 100th anniversary of the canonization of Saint Seraphim of Sarov by the Russian Orthodox Church. What at first glance would seem to be an exclusively internal Church event has been used to promote a contemporary Russian socio-political agenda.

Prokhor Isidorovich Moshnin—the Seraphim of Sarov—was born in 1754 and died in 1833. He was canonized in 1903. A half-century later, in 1953, the Soviet Union tested the world's first hydrogen bomb, which was developed in the closed city of Arzamas-16 (now once again known as Sarov). The nuclear center is sited where the monastery at which St. Seraphim lived his monastic life once stood. Though, at the time the bomb was tested, there was no celebration of the 50th anniversary of the saint's canonization—neither in the church nor among the atomic scientists.

Today, the coincidence of these commemorative dates and the location they are associated with—the centenary of the canonization of the saint and the 50-year anniversary of the invention of the hydrogen bomb—has supplied a pretext for attempts to mystically combine religious fervor with the work done to develop weapons of mass destruction. One Russian newspaper, in its chronicling of the celebrations that were held in Sarov (Arzamas-16) in August 2003 on the occasion of the 100-year anniversary of the canonization of Seraphim of Sarov, wrote: "If Saint Seraphim had not permitted the creation of the nuclear bomb here, it never would have happened."[42] In other words, it would not have been possible without the blessing of Seraphim, even though he himself never said anything of the kind.

The history of the life of St. Seraphim is witness that he was far removed from military matters—even the Napoleonic invasion of Russia that occurred during his lifetime was unable to interrupt his many years of seclusion at the monastery. Seraphim was much more devoted to saving souls, and became renowned for his miraculous acts. According to the Orthodox encyclopedia's accounts of the main events in Seraphim of Sarov's religious life:

"Saint Seraphim of Sarov teaches: 'Sow it in the good soil, sow it in the sand, sow it on the rock: somewhere a seed may germinate and grow in glory to God.' Even a humble sowing of good, with the mercy of the Lord, can grow and bear fruit for those dearest to us and for others and for our own souls."[43]

The monastic life of Seraphim of Sarov is a religious epic in devotion to helping the poor and the suffering.[44]

The radicalism of the Russian revolutionary era completely disrupted the veneration of the newly canonized St. Seraphim. The Bolsheviks, in thought and deed, adhered to the doctrine of militant atheism. Lenin's slogan *proclaiming active struggle against priesthood* did not bypass the Sarov compound, which was closed down in 1919. At the beginning of the 1920s, the relics of Seraphim were removed from the cathedral built by Emperor Nicholas II and disappeared from Orthodox religious life for many long decades.

Then came a time when the new authorities persecuted believers and clergy. They tore crosses out of churches, threw down church bells, and burned ancient icons that had been prayed to for centuries. Many priests were swept up by the iron broom of repression.

In order to beat religious spirituality out of people and further humiliate the church, the state pursued a policy of converting churches into storage facilities, cattle barns, community centers, workshops, and even prisons. A munitions factory was located on the grounds of the Sarov monastery up until the Nuclear Center was founded.

The Sarov compound was attractive to the founders of the Nuclear Center primarily because it was easy to establish an isolated and tightly guarded zone there. Part of the laboratory was housed in the monastery's buildings.

One should not presume that the Nuclear Center could somehow have guaranteed that the old structures would be preserved and maintained. The destruction of monasteries and churches was an integral part of a deliberately aggressive policy on the part of bolshevism. Demolition of the Sarov monastery began as early as the 1930s, the same time when Christ the Savior Church was torn down in Moscow.

The first Soviet atom bomb, born at the Nuclear Center, was tested at the Semipalatinsk Test Site on August 21, 1949. There is no evidence to show that any of the scientists working on the project were thinking at that time about Seraphim of Sarov or anything holy. The opposite is much more likely. In the early 1950s, the main cathedrals of the Sarov complex were destroyed. The convenient pretext was that the buildings were old and run-down. The demolition, however, took a long time—the walls turned out to be so strong that they had to be dynamited several times.

At the end of the 1950s, after Stalin's death and at a time when it was Khrushchev's turn to fight the Church, an order was received to demolish the still-existing bell tower, since it was giving away the facility's location. The Center's top officials managed to dissuade Moscow from doing this. Incidentally, until very recently, a television antenna that served the city took the place of the bell tower's cross. When during the summer of 2003, in conjunction with the 100-year anniversary of the canonization of St. Seraphim, the antenna was replaced with an Orthodox cross, the residents of the city had to go temporarily without television. This upset many people. As for the Church of Seraphim of Sarov, before it was recently renovated, it housed a theater of the arts; the altar had been destroyed.

Dare I say that the spirit of St. Seraphim, more than likely, would have had little to say about the development within the walls of the former Sarov compound of atomic and hydrogen bombs. Seraphim was a deeply peaceful holy man, and he never encroached upon the territory of the glorious patrons of Russian arms, Sergey Radonezhsky and Alexander Nevsky. As for the monastic life of St. Seraphim, it would seem that he would not have been able to either forbid or inspire the creation of the nuclear bomb. The political circumstances of the mid-20th century were hidden from him by a thick veil of time. Attempts to ascribe to St. Seraphim patronage of the atom bomb are tantamount to an attempt to change the past, which, to the best of our knowledge, even God cannot do.

The intellectual and spiritual bridges with which some apologists try to connect Seraphim of Sarov with the atomic and hydrogen bombs are unconvincing. They essentially rely on a quote not from St. Seraphim himself, but from an acathistus written 70 years after his death on the occasion of his canonization in 1903. "Rejoice, shield and protector of our Fatherland." Meanwhile, it is no secret that neither by the sword nor by the bomb did the humble Seraphim protect the Russian land, but rather by his faith and Christian preaching, which called people to moral purification.

Arbitrary allusions ranging from a *tsar-bomba* museum artifact to a reliquary with the newly obtained relics of Seraphim of Sarov look like artificial ideological inventions that add neither holiness to the sainted miracle-worker and healer nor technical perfection to the Soviet bomb. It would seem that one cannot insert Orthodox tradition into the nuclear bomb without violating Christian morality and without unwittingly becoming like fundamentalist extremists who called in their own time to the creation of, for instance, an "Islamic" atom bomb. It would seem that any attempt to attach to the atom bomb a label, be it of Islamic, Confucian, Anglican, Buddhist, Catholic, or Orthodox origin, could only add an additional dimension to the historic dispute among the various religious faiths. Is it worth sowing the seeds of dissension and rupturing the world along the lines of one civilization or another? It would be a step backward towards the era of religious wars.

Reconciling the very humble Seraphim with the nuclear bomb is an unnatural image. It would hardly be possible for most people, whether believers or non-believers, to ask for physical or spiritual healing from a patron of the 50-megaton *kuzkina mat*, after the explosion of which the islands of Novaya Zemlya, it is rumored, shifted their geographical coordinates, and herds of deer, blinded by the unprecedented flash in the sky, wandered for some time afterward around the tundra.

What is worthy of admiration in the history of the epic Christian life of *starets* Seraphim is that the memory of the miracle worker could not be erased, despite all the ravages that have befall-

en the Sarov monastery. The life of St. Seraphim cannot be linked to the atom bomb. Something is not right here.

After the closed zone was established around the KB-11 design bureau in 1946-47, the city of Sarov began to be referred to by the following code names: Moscow, Center 300, Kremlev, Privolzhskaya kontora, and Arzamas-16. Its historical name was restored in 1995. Earlier, in 1991, the newly acquired relics of Seraphim of Sarov were transferred to the convent in Diveyevo.

Although, for security reasons, Sarov still has a pass system in effect all around its perimeter, the restoration of sacred Orthodox objects and places associated with the name of St. Seraphim can be regarded, with complete justification, as redemption for the debasement suffered by the Orthodox faith and church at the hands of bolshevism. It seems that a time will come, and ways and means will be found to completely restore the Sarov monastery as a place of pilgrimage for anyone who so desires, and not just certain individuals.

One should not, though, ignore history and undertake the "nuclear privatization" of St. Seraphim within the borders of the closed city, i.e. unite his preaching with the state matter of upgrading first the Soviet, and now the Russian nuclear arsenal. Render unto God what is God's and unto Caesar what is Caesar's.

The scientific feat of developing a Soviet nuclear bomb, thanks to which strategic parity with the United States was achieved, has in no way been forgotten. A model of the bomb is kept safely and reverently in the city's Museum of Nuclear Weapons. And that is exactly where it belongs, not in a church. The Soviet-Russian nuclear bomb does not need the blessing of the church. In a church, it seems, one is to pray not about the atom bomb, but about preserving and strengthening peace on earth.

No one should be deluded by the coincidence of location. That St. Seraphim and KB-11 carried out their work on the territory of the Sarov monastery is a noteworthy historical fact occasioned by fate and, to a certain degree, the deliberate anti-religious policies of the state. There is no other way to understand this situation. Indeed, if you rely on another, mystical point of view, it is possible to imagine, for instance, that there is a connection between the holiness of the Solovetsky monastery and the Gulag, which, in the 1930s, flourished on its grounds. One could also take the Andronikov monastery in Moscow. After the October 1917 revolution, one of the first Soviet concentration camps was set up there to hold alien elements. Is it possible for there to be a relationship between this and the brilliant *Holy Trinity* created by Andrei Rublev within the walls of the monastery? Probably, yes, but only as a sign that highlights the militant godlessness of the authorities that converted a sacred place into a temporary prison.

THE MORAL IMPERATIVE OF NUCLEAR WEAPONS

The nuclear thinking of mankind is constantly evolving. The atom bomb is alternately being mercilessly cursed or praised for its stabilizing characteristics. Meanwhile, it's worth noting that both the stabilizing and destabilizing effects on international politics that are derived from the nuclear weapon have a common underpinning—the weapon's ability to cause a global catastrophe of unprecedented scale. Mutual nuclear deterrence is based on the fear of such a possibility.

As noted above, the concept of MAD, which compels a potential aggressor to sit quietly, represents a pragmatic choice of the "lesser evil." No matter what is said, one should consider it a fair statement that all-out nuclear war represents an absolute evil. On the contrary, a nuclear world filled with anxiety is an absolute good. In aphoristic and paradoxical form, this was expressed by Bertrand Russell, who gave us the notion of "Better red than dead."

Do the peacekeeping and intimidating functions of nuclear arsenals therefore imply that they should be absolved of immediate condemnation as an instrument of possible global catastrophe? Hardly, since despite the sincerity in its official names and titles, the nuclear weapon in all its incarnations was and still is what it is: a means of mass destruction. The principle of limiting and reducing nuclear weapons, which entered the flesh and blood of international politics in the 1960s and 1970s, along with the principle of the nonproliferation of nuclear weapons, embody

a powerful moral and ethical imperative. To adhere to these principles from this point on means to work for the mitigation of international tensions, against military threats, and for peace and stability. On the contrary, abandoning these principles is a concession to global evil.

Steps to support nuclear deterrent forces have a positive moral and ethical meaning if they are taken within the framework of maintaining parity, i.e. in accordance with the principle of sufficiency. There is no contradiction here. This is a given in today's nuclear world.

One should always keep the moral ambiguity of the nuclear weapon in mind. It is a reliable guide that can be counted on to prevent us from falling into nuclear euphoria in hopes of political gain. This is important for both politicians and physicists to understand.

The same dilemma exists with physical sciences and the humanities. Which should be given preference? Neither of them should. Both are equally necessary. It would be impossible to do without the humanities, i.e. without morals.

The nuclear weapon is one of the harsh realities of our era. It is so harsh that contemporary Russian military doctrine rejected the unilateral renouncement by the Soviet Union of the first use of nuclear weapons. This change, one would suppose, was occasioned by the objective requirements of national security. The actual scale and nature of the threat might force one to resort to an extreme measure of restraining aggression, should it occur, by using nuclear arms on the battlefield.

Demagogic attempts to play the atomic card for "flag-waving" patriotic reasons as a "bargaining chip" in discussions about the necessity of "restoring the greatness" of Russia are objectionable. It's no secret that although the bipolarity of the Cold War era has collapsed, U.S.-Russian nuclear parity even now continues to fill its systemic role in ensuring the global balance of power. In the nuclear sense, the world is still primarily "bipolar" as opposed to multipolar and even more so to unipolar. Authoritative reports in the media about the practical steps being taken by Russian authorities to modernize and maintain the operational readiness of their ICBMs, SLBMs, long-range bombers, anti-missile systems, and air defenses show that our nuclear deterrent capability has been maintained at a sufficient level. Alarmism is harmful and out of place here. Nuclear capability must, on the one hand, provide a convincing nuclear deterrent while, on the other, not appearing confrontational, since this would damage stability.

The new dangers that have emerged in the international arena, which are primarily linked with the further spread of nuclear weapons and the more acute threat of terrorism, have marginalized the idea of nuclear disarmament as untimely and utopian. It is very seductive to accord the nuclear weapon the role of arbiter—"The Great Inquisitor"—something that is sorely needed to prevent nations from engaging in mortal combat for their own selfish interests.

Meanwhile, it would be a mistake to exaggerate the importance of the peacekeeping function of nuclear weapons in relationships among states. This approach would be tantamount to acknowledging the fatal inevitability of continuing the nuclear arms race and having these weapons continue to spread across the earth's surface. The predominance of force as a factor in politics would never end.

The doctrine of "limited nuclear war" does not provide a way out of the nuclear dead end. Proposed during the Cold War era, it induced a false sense of security in comparison with a total nuclear cataclysm. Under the influence of this military policy, the illusion of nuclear weapons suitable for achieving rational political objectives also arose. It is most fortunate that the formulations of this doctrine remained only on paper. Recently published top-secret Warsaw Pact materials show that a "limited" nuclear showdown between NATO and the Warsaw Pact would have left most of Europe in ruins. And this is without factoring in the dangers of escalation inherent in any use of nuclear weapons in an actual war.

In the face of global challenges of unprecedented scale—global warming, environmental destruction, epidemics, mass starvation, energy crises, etc.—mankind, for the sake of self-preservation, ultimately cannot avoid thinking about the necessity of making the transition to a qualitatively new type of cooperation in the global arena. Although there have been many contradictions, this transition is already occurring through globalization, meaning an increase in interdependence among states and their interests. As for the so-called "anti-globalists," who

in their idiotic rage smash storefronts and set fire to the vehicles of respectable citizens, it would seem that they sing with the alien voice of the masters of international terrorism. Confused young people make up for their unhappiness with their own social dislocation at the expense of people who have never done anything wrong to them. No doubt among these disheveled anti-globalists is a large percentage of paid provocateurs.

The stand-off along the demarcation of "socialism vs. capitalism," which polarized the world during the Cold War, no longer exists. The direct threat of a global military catastrophe has been averted. The prerequisites for harmonizing national interests, for a joint effort to combat what are probably the main plagues of the 21st century—international terrorism and the proliferation of nuclear weapons—have materialized.

Mankind's dependence on nuclear weapons to guarantee the absence of war will gradually fade into the past. Nuclear weapons will be replaced by rigorous international agreements overseen by the U.N. Security Council and stipulating strict control over the military activity of nations up to and including taking collective enforcement actions in the event of a violation of the prevailing peace.

The core of such an order would be a ban on nuclear weapons. This is not likely to happen overnight, as nations will approach nuclear disarmament in parallel with an advancing humanization of the entire system of international relations and the reinforcement of mutual trust. Within a context of confrontation, political squabbling, and active rivalry in military build-up, it would, of course, make no sense to pose a practical question about total and comprehensive disarmament. To freeze like a deer in the headlights before nuclear weapons is, however, also unacceptable and essentially immoral. The world deserves a better fate than to sit on the nuclear powder keg.

The contrariness of human nature is a serious argument in favor of nuclear disarmament. To avoid the devil's temptation, the nuclear weapon, in the final analysis, must be taken away from us.

Certainly, the intriguing issue of deadlines remains: when, exactly, will it be possible to begin the systematic destruction of the prolific nuclear genie that has long been out of the bottle?

The program proposed by Soviet president Mikhail Gorbachev in January 1986 stipulated that nuclear weapons would be destroyed by the end of the 20th century. One recalls how, at the U.S.-Soviet negotiations on nuclear and space-based weapons in Geneva, we, the Soviet diplomats, in accordance with our instructions, justified this approach in discussions with our counterparts. Our mission was made easier by the fact that we, understandably, devoted most of our attention to immediately practical problems in the area of arms limitations, reinforcing the ABM treaty, solving the problem of intermediate-range missiles, and deep cuts in strategic offensive weapons. We would, however, inevitably touch upon the theme of achieving a nuclear-free world.

In mid-1986, during an unofficial discussion, the U.S. assistant secretary of defense, Richard Perle, with whom I was privileged to prepare the draft Nuclear Risk Reduction Center Agreement, became interested in my personal views regarding how long it would take for nuclear disarmament to occur in light of the fact that nations had yet to reconcile politically. My reaction to Perle's question, which was filled with skepticism, boiled down to saying that agreements to reduce nuclear arsenals on the way to disarmament would go together with changes in the very nature of relations among states, all the while moving away from Cold War traditions.

Perle, of course, did not believe that nuclear disarmament would happen any time soon. In the best-case scenario, according to him, it would not happen before the middle of the 21st century.

At the time of our conversation, this seemed like something far over the horizon—a remote and vague future. Twenty years after our meeting, the timeline indicated by Perle has moved substantially closer in time. It's interesting what he would have said if commenting on a problem he himself had brought up.

The difficulties of moving along the path of reducing the nuclear threat are obvious, but should not be turned into dead ends. The preservation of political tension, the return to old disputes and the search for new ones, and attempts to, one way or another, reanimate Cold War mores, will not yield any dividends.

The color photographs taken by U.S. rovers of Martian deserts, where, as near as anyone can tell, oceans once existed, give one cause to think. What turned Mars into a trackless void? What caused the reversal of the magnetic field that, at one time, protected the Martian atmosphere, which has all but disappeared? The analogies with Mars serve as a warning and provide an incentive to take action.

The general director of IAEA, Doctor Mohammed ElBaradei, at a speech given upon the occasion of his receipt of the Nobel Peace Prize on December 10, 2005, emphasized:

"I have no doubt that, if we hope to escape self-destruction, then nuclear weapons should have no place in our collective conscience, and no role in our security. To that end, we must ensure—absolutely—that no more countries acquire these deadly weapons. We must see to it that nuclear-weapon states take concrete steps towards nuclear disarmament. And we must put in place a security system that does not rely on nuclear deterrence."[45]

Given that ElBaradei is Muslim, these words embody a de facto ecumenical call for nuclear disarmament.

Now that passions surrounding the U.S. withdrawal from the ABM treaty have died down, it would be possible to seriously take up the issue of the gradual renunciation of the concept of MAD by drafting broad U.S.-Russian agreements on mutual security, as opposed to mutual danger. These agreements could serve as reliable bulwarks against both nuclear terrorism and potential nuclear saboteurs.

At some point during U.S.-Soviet negotiations on limiting and reducing strategic arms, the principle of "parity and equal security" was formulated and successfully adopted. This was a time of acute political and ideological confrontation. In the new, post Cold-War era, the principle of "mutual security" would require the replacement of only one term.

Nuclear disarmament is on the agenda of the current Russian foreign policy doctrine. It seems that this component could be strengthened and made more concrete as a final objective, some type of beacon in the cause of eliminating the nuclear threat.

One should not succumb to over-optimistic dreams about a world completely free of conflict—that will obviously never come to pass. To resolve, however, emerging disputes without resorting to war or the threat of force, without brandishing, so to speak, a nuclear shin bone—it's difficult to find constructive alternatives to such a world order.

Here the main prerogatives belong to the U.N. Security Council. Under its aegis, it would be possible to establish an effective international mechanism for monitoring existing nuclear arsenals. Such a monitoring system would make it possible to eliminate the likelihood of unexpected nuclear aggression and/or to clearly identify the source of such danger. As a result, nuclear weapons, while yet on the verge of being completely banned, would be deprived of their gloomy aura as a terminator of mankind.

ON EXHIBIT

An exhibit organized in the second half of the 1950s at Moscow's Gorky Park, presumably to commemorate the 10-year anniversary of the bombing of Hiroshima and Nagasaki, comes to mind. In oversized paintings rendered in traditional Japanese style, the husband and wife team of artists—the Marukis—depicted the grief and suffering that befell the residents of these cities, incinerated by the atomic firestorm of August 1945. Here were the harrowing scenes of Dante's inferno on earth in the 20th century. A hell created by people.

Leafing through the pages of the guest book, as is my habit, I came across the following entry: "Why show this to people? This will surely happen again." One visitor did not want other visitors to be upset by the pictures of the inevitable fate of mankind.

As of now, however, it has been possible to avoid repeating the tragedy of the Japanese cities, despite the fact that many theoreticians were predicting an imminent atomic exchange. Thanks to the will of God. Thanks to adherence to the covenants of the doctrine of deterrence, which are nourished by the unquenchable instinct of self-preservation. And thanks to the tireless

work of diplomats enlisted in the cause of limiting nuclear arsenals, and also thanks to a capricious destiny that has not yet abandoned people.

There is, however, insufficient basis for unconditional optimism. Faith in the future of world civilization has to be bolstered by unflagging joint efforts directed towards the prevention and, in the final analysis, elimination of the risk of nuclear catastrophe. People will become accustomed to living in a world without the threat of mutual destruction. Only then it will be possible to manage without mutual nuclear deterrence or intimidation.

The moral ambivalence towards nuclear weapons is closely tied to their purpose—helping to preserve international stability. On the one hand, nuclear weapons hold the threat of catastrophe while, on the other, securing the balance of military power. In both cases, the goal is the same: to prevent the unleashing of aggressive fantasies. When, as a result of fundamental political changes in the international arena, nuclear weapons cease to be a factor in global parity, the dualistic formulas that must now be used when assessing nuclear weapons from a moral and ethical standpoint will be forgottenon the one hand, while, on the other... The atomic bomb will be used solely to destroy dangerous asteroids hurtling towards Earth. Instead of being the terminator of mankind, the atomic bomb will finally become its savior.

Notes

[1] Translation by Lucy Vogel, "A Symbolist's Inferno: Blok and Dante," *The Russian Review* 29 (January 1970), pp. 38-51.

[2] S. N. Bulgakov, *Sochineniya v dvukh tomakh [Collected Works in Two Volumes]* (Moscow: Nauka Publishers, 1993), Vol. 2, p. 391.

[3] *Zavtra* No. 507 (August 2003), p. 6.

[4] Niebuhr Reinhold, *The Irony of American History* (New York: Charles Scribner's Sons, 1952), pp. vii-viii.

[5] G. K. Zhukov, *Vospominaniya i razmyshleniya [Reminiscences and Reflections]* (Moscow: Novosti Publishers, 1995), p. 336.

[6] A. P. Sudoplatov, *Raznyye dni taynoy voyny i diplomatii. 1941 god [Some Days in the Secret War and Diplomacy. 1941]* (Moscow: OLMA-Press, 2001), p. 314.

[7] Milovan Djilas, *Conversations with Stalin* (Moscow: Tsentrpoligraf, 2002), p. 174.

[8] *Izvestiya*, February 28, 2004, p. 13.

[9] Felix Chuev, *Sto sorok besed s Molotovym: iz dnevnika F. Chuyeva [Molotov Remembers Conversations with Felix Chuev]* (Moscow: TERRA, 1991), p. 90.

[10] James Burnham, *The Struggle for the World* (New York: The John Day Company, Inc., 1947), pp. 244-245.

[11] Ibid., p. 182.

[12] George Kennan, *Diplomatiya vtoroy mirovoy voyny. Glazami amerikanskogo posla v SSSR Dzhordzha Kennana [translation of Memoirs: 1925-1950]* (Moscow: Tsentrpoligraf, 2002), pp. 257-258.

[13] Ibid., pp. 256-257.

[14] Ibid., pp. 259-260.

[15] Reinhold, pp. 145-146.

[16] Ibid., p. 129.

[17] Ibid., p. 134.

[18] Ibid., p. 39.

[19] Edward Teller, *Memoirs. A Twentieth-Century Journey in Science and Politics* (Cambridge, Massachusetts: Perseus Publishing, October 2001), p. 215.

[20] Ibid., p. 287.

[21] Ibid., pp. 292-293.

[22] *Izvestiya*, April 17, 1994, p. 13.

[23] Andrei Sakharov, *Vospominaniya v dvukh tomakh. Tom pervyy [Memoirs, Volume I]* (Moscow: Human Rights Publishers, 1996), pp. 270-271.

[24] Hugo Grotius, *O prave voyny i mira* [*On the Laws of War and Peace,* translation of *De jure belli ac pacis (Paris, 1625)*] (Moscow: State Publishers of Political Literature, 1956), p. 538.

[25] Report of the President's Commission on Strategic Forces, April 1983, pp. 2-3.

[26] Herman Kahn, *On Thermonuclear War* (Princeton: Princeton University Press, 1960), p. 287.

[27] Norman Cousins, "High-Tech Arms Leave Little Time to Avert Disaster," *International Herald Tribune*, February 8-9, 1986, p. 4.

[28] Grotius, *On the Laws of War and Peace*, p. 569.

[29] *Independent Military Review* 358 (December 5-18, 2003), p. 4.

[30] George F. Kennan, *The Nuclear Delusion: Soviet-American Relations in the Atomic Age* (New York: Pantheon Books, 1982), p. xiv.

[31] Ibid., pp xxii-xxiii.

[32] Ibid., xiv.

[33] Ibid., p. 175.

[34] Ibid., p. 176.

[35] Ibid., p. 195.

[36] Ibid., pp. 199-200.

[37] "Nuclear War Strategy," Hearing before the Committee on Foreign Relations, United States Senate, Ninety-Sixth Congress, Second Session on Presidential Directive 59, September 16, 1980 (Washington: US Government Printing Office, 1981), p. 22.

[38] Kennan, *The Nuclear Delusion*, pp. 102-103.

[39] Ibid., p. 204.

[40] Ibid., p. 206.

[41] Ibid., pp. 206-207.

[42] *Zavtra* 507 (August 2003), p. 6.

[43] *Pravoslavnaya entsiklopediya [Orthodox Encyclopedia]* (Moscow: Rusizdat, 1999), p. 450.

[44] Saint Seraphim spent more than 25 years (1784-1810) as a hermit in the "wilderness," surviving an attack by robbers, during which he was badly beaten. During this time, he passed 1,000 days and 1,000 nights in prayer on a rock in a remote forest, living on grass. In 1810, Seraphim went into seclusion in a monastery. Then, in 1820, he came out of seclusion and began to receive believers, who came to him for consolation and healing. Seraphim of Sarov had a heart filled with pious love for people. He rejected black clothes and went around in a white cassock. He brimmed with pastoral joy and faith in the Risen Christ throughout the year. He greeted everyone with "Good day, my dear! Christ has risen!" His biographers report that, since childhood, Seraphim had enjoyed the special patronage of the Mother of God, who appeared to him on more than one occasion. Not far from the Sarov monastery—in Diveyevo—he founded and looked after a convent.

Reverence for Seraphim of Sarov began while he was still living, and after his death, people from all over the country came to his chambers. The canonization of St. Seraphim took place at the behest of archimandrite Seraphim (Chichagov), who told the story of the *starets*' life to Emperor Nicholas II. In 1903, the entire imperial family attended the canonization ceremony in Sarov. Empress Alexandra Feodorovna, who dreamed of having a son, bathed while praying in the miraculous spring of Saint Seraphim, and soon became pregnant, giving birth a year later to the heir to the throne, her son Alexei. The grateful emperor decreed that a cathedral be built in Sarov, and St. Seraphim's relics were enshrined there.

[45] *IAEA Information Bulletin*, December 10, 2005, p. 2.

Dmitri Trenin Vitali Tsygichko

WHAT IS CHINA TO RUSSIA: *COMRADE OR MASTER?*

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: More menace than challenge

Good day, Dmitri,

There is one urgent question that has descended from the realm of high theory to the sphere of practical policy. I am very worried about it, and would like to pose it as a topic for discussion with you in our electronic correspondence, although it is certainly not a new topic for you.

Here is the question: recently, observing the behavior of our southern neighbor—China—I have to conclude that it is returning to its imperial traditions ever more and acting accordingly. Today the Celestial Empire, with its powerful, dynamically developing economy as well as the most numerous army in the world, is a center of power, attempting to strengthen and enlarge its influence not only in the Asia-Pacific, but also far beyond its limits. Moreover, relying on historical tradition, the new Middle Kingdom is shunning no means to achieve its hegemonic aims and is acting more and more brazenly.

And I say without reservation: in my view, the openly hegemonic direction that Chinese foreign policy has taken poses a direct threat—or, to be more precise, an entire collection of threats and challenges—to Russian interests in the Asia-Pacific region.

What conclusions should Russia draw, and how should it correct its foreign policy?

Sincerely,

Vitali Tsygichko

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Soft power

Hello, Vitali,

Speaking of threats and challenges, it seems to me that you are describing everything in unjustifiably gloomy tones.

Yes, China is a growing center of power at the global level. In the distant future (mid-century) China may become the world's largest economy. The increase in China's economic weight will be accompanied by an increase in its political influence. China's military power—both conventional and nuclear—will continue to be improved. At the same time, China's *soft power* will continue to grow, based on its growing attractiveness and its ability to influence the desires

and behavior of other countries. Figuratively speaking, *without leaving its shores*, China will gradually *twist* its surrounding *space*, forcing other countries and peoples to orient themselves toward the Middle Kingdom.

But China is not going to be like the Soviet Union or Japan of the 1930s. Its expansion will not be predominantly territorial in nature, and basically will not be achieved by military means. The Chinese *divisions* will be transnational corporations with their headquarters in Shanghai, Beijing, Shenzhen, and so forth. PRC military aggression against Russia is extremely improbable in the foreseeable future (let us say, 15-20 years). "Shunning no means" and "acting brazenly" cannot be said about 21st century China, which, on the contrary, is acting scrupulously and prudently.

Yours,

Dmitri Trenin

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Military games

Dmitri,

I cannot agree with your idea that China's "expansion will not be predominantly territorial in nature, and basically will not be achieved by military means."

That China is acting scrupulously and prudently is true. It is for this very reason that it is important for us to understand why, in September 2006, it conducted a 10-day Chinese People's Liberation Army (PLA) exercise that was unprecedented in scale, involving the Shenyang and Beijing military districts, the two most powerful of the seven Chinese districts. These are the very regions that border on Russia: Shenyang abuts the Russian Armed Forces' Far Eastern district, and Beijing the Siberian military district. During the exercises, Shenyang units advanced 1,000 km into the Beijing district, where they combated units from the latter. As is clear to any military expert, the exercises were practicing the conduct of an offensive operation against Russia and Kazakhstan. In practice, a troop exercise of such great scale is generally conducted to check strategic concepts that have already been developed as well as operational plans that have been adopted by the military.

But these exercises were undertaken during a period when our political and economic ties were at their highest point! Such a frank show of force should have clearly said to our country's leaders that China is ready to unleash a war against Russia if its policies do not meet Chinese interests. It is strange that neither the political nor the military leadership of our country reacted in any way to this military demarche.

Vitali Tsygichko

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Look inside

Vitali,

I am confident that the Russian military is attentively studying the scenarios of the Chinese exercises. I do not believe that your conclusion about the aims of the exercises that were carried out is substantiated. It would seem that you yourself are puzzled by your conclusion, since you immediately write that the exercises were conducted during a time, "when our political and economic ties were at their highest point." If your conclusion is valid, then one of the following two things is true: either Beijing, acting so illogically, simply undermined its own long-term strategy, or the PLA leadership acted independently of the leadership of the PRC. Otherwise, your conclusion is not valid, and a more in-depth analysis is necessary.

However, if we develop your thought about the Chinese threat, then we should concentrate on the development of Russia itself or, more precisely, of our eastern territories. The development of the Far Eastern and Eastern Siberian districts and their dual integration—into Russia as well as the Asia Pacific region—is one of the most important geopolitical problems facing Russia today. The solution to this problem, however, depends on Russians themselves—the political leaders, businessmen, federal and regional elites, as well as, in the end, the public. If Russia *loses* the Far East and Siberia (and China *takes* them), it will happen not because of Chinese expansion, but because of Russia's inability to develop. I hope that this it will not occur. Russia has an officially acknowledged and completely agreed-upon border with China. The Russians themselves, and no one else, answer for what happens inside these borders. Russia's "Chinese problem" is located inside them.

Yours,

DT

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Check the textbooks

You see, Dmitri, if it is impossible to change the current negative trends of social and economic development in the Russian Far East, then as a result of Chinese demographic and economic expansion this territory may become its protectorate. Under certain circumstances we cannot exclude the possible annexation of a number of regions in the Russian Far East, possibly with the aid of military force, since official Beijing considers these territories to be temporarily "alienated" and historically belonging to it. You can even judge these Chinese territorial claims by looking at *school geography textbooks, where a number of Russian Far Eastern regions are included within the country's borders.*

A key concept that Chinese theorists use to understand the development of the world today is the idea of "survival space," which, in my opinion, is used to ensure security and the state's vital activities, as well as its scientific, technical, and economic development. The so-called "strategic boundaries" of this space are the territorial and spatial borders within which the state, with the aid of the military, is realistically capable of protecting its interests.

The "survival space" includes all spheres of the state's vital activities, on land, at sea, under water, in the air, and in space. The dimensions of "survival space" are determined by a country's economic, scientific, technical, social, and military capabilities (the "total power" of the state). According to Chinese theorists, the strategic boundaries of the "survival space" of strong powers extend far beyond their state borders, while the "survival space" of many *weak* countries has strategic boundaries that do not always correspond to the "total power" of these states, which can sometimes lead to *weak* countries losing some of their territory. In their opinion, a majority of countries today are striving to establish new strategic boundaries for their "survival space" that correspond to the state's real power. Hence, it follows that China must enlarge its "survival space" in accordance with its growing economic and military power at the expense of weaker neighbors, including Russia.

This theory, which justifies using force to solve international problems, became the basis for Chinese foreign policy long ago and has been completely confirmed by recent events. China has territorial claims against 11 of its 24 neighbors, including India, Japan, Vietnam, the Philippines, and Russia, and is trying to annex territories that it considers disputed, including by force.

Military force was and remains the most important political factor, and, as recent history shows, China is actively making use of this factor in its relations with all of its neighbors.

Now I'd like to go back to my previous e-mail about the PLA exercises. In China these sorts of events can only happen through a decision of the country's highest leadership, which completely governs the military and sets military policy and military strategy. Therefore I cannot agree with you regarding political and military analyses of the strategic exercises undertaken by the Chinese army.

Any military expert knows that exercises on this scale are undertaken at the final stage of a multi-year program to train troops to enact strategic and operational plans in the military theater of operations. The geography of these exercises and the offensive nature of the tasks undertaken leave no doubts that Russia played the role of the "potential adversary."

A show of force is an ancient, traditional Chinese political method. It is clear that the exercises were a well thought out, and primarily political action, giving us to understand what "potential adversary" Russia will have to deal with, what the strategic plans of this adversary will be if relations turn sour, and how it should treat China.

To conclude, I have to say that the Sino-Russian border agreement in no way guarantees our security in the Far East. Chinese political practice indicates that it will easily violate any agreement that does not suit it for one reason or another. In the second place, the border agreement is strictly classified and it is not known to the general public. Meanwhile, a number of serious American publications asserts that this agreement was concluded for a period of just 20 years, after which time the parties must return to negotiations on this question. The fact that the text of the agreement has been held secret speaks in favor of this assertion.

Vitali T.

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Thorough research

Vitali,

The formulation of Chinese foreign policy is a far more complex and contradictory process. You give your reading of the concepts proposed by Chinese theorists. Maybe it is close to the truth, but whether it is or not can only be established after serious analysis and comparison of these texts with real life. Furthermore, one must take into account the fact that the policies of any modern state are not simply based on theoretical constructs. *From without* any policy will appear more logical and more complete—and sometimes more ominous—than it really is. On the contrary, one's own policy seems less focused, more eclectic, and frequently weaker than it appears from outside.

As far as the secret agreement is concerned, it is very hard for me to imagine a Russian president who would conclude a clearly unfavorable, secret *agreement that is also only valid for 20 years*. *In principle, when the moment of truth comes* it should still be welcomed. It is hard to imagine what could induce the head of the Russian state to agree to such a massive surrender of fundamental national interests. Moreover, from your reasoning it follows logically that there is no special need for such complex and secret constructions: "the Chinese easily violate any agreement."

I object to automatically interpreting the vagueness that exists as evidence of the existence of a Chinese threat. China is a topic that is too serious for Russia for it to be discussed in a wholly complimentary spirit or, on the contrary, with a predetermined *incriminatory bias*. But it absolutely must be discussed—on this, I think, we are in agreement. In my opinion, China should neither be thoughtlessly admired because of its new power nor instinctively feared. It requires attentive and thorough study. Otherwise errors are inevitable.

DT

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Russia is being used

OK, then let's examine this question attentively and thoroughly.

Russia has an important place in the Chinese geopolitical game, and Beijing is doing everything possible to ensure that our country remains in its sphere of influence. First of all, Russia is extremely important for China as an economic partner: as a supplier of the energy resources

needed to continue the country's economic modernization, and as a supplier of modern weaponry for its army. Therefore, the Chinese will do everything possible to strengthen their economic and political position in our country. The enormous activity of the Chinese lobby in Russia, which is operating successfully at all levels of government, testifies to this.

Sino-Russian cooperation today is developing rapidly in the economic, political, military, and other spheres. It goes without saying that the development of good-neighbor, mutually advantageous relations between our countries can only be welcomed. However, the current trend and the content of these relations must be based not on the immediate political situation, as it is now, but on a clear understanding of our long-term national interests and a sober analysis of the far-reaching aims of current Chinese policy, taking into account its geopolitical ambitions, for which it is actively using Russia.

Vitali

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Re: Russia is being used

I support the call to recognize Russia's long-term interests and the formation of policy on this basis, not on the basis of the immediate political situation. At the same time, foreign policy everywhere has always reflected the concrete interests of ruling elites (with corrections to make them democratically legitimate—where democracy exists), their world view and prejudices. Russian foreign policy is determined and will be determined by concrete—and partially competing—interest groups with various ideologies and prejudices. The rapprochement with China has a material basis, which cannot be ignored.

For China, Russia is a strategic rear and an enormous resource base. It is natural that China try to keep Russia in its field of "amicable gravitational pull" and to increase its access to various Russian resources—from natural resources (energy and ecological) to technological resources (weapons and space). Chinese influence on Russian decisionmaking, first and foremost on questions related to cooperation with the PRC, exists, but there is no "Chinese lobby in Russia, which is operating successfully at all levels of government," although, of course, over time it could arise.

Yours,

DT

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: What about Russia's interests?

I am also greatly worried by the clearly observable Chinese influence over our foreign policy of late, which is pushing an anti-American and anti-Western bent. This is clearly against basic Russian national interests.

China, in trying to turn our country into its "strategic rear and resource base," will never be interested in our economic and political development. Therefore, the present eastern focus of our policy helps, using your terminology, to "twist space" in the interest of China, but not in the basic interest of our country.

I would also like to mention the important tool of Chinese regional policy that is the Shanghai Cooperation Organization (SCO). China needs this organization, first of all, to strengthen its influence in the region and its control over the region's natural resources. As the strongest regional power, China would like to predominate in this organization and use it in its own interests to the maximum extent possible (which the Chinese proposal to completely fund all SCO energy projects alone indicates. In addition, this organization helps to ensure freer access of Chinese goods to the markets of SCO countries). It does not have to worry about its own market, as it has no competitors. Only Russia is a serious competitor to China within the SCO

framework, as the former is seriously trying to prevent the attempt of the latter to dominate the organization.

No one threatens China's land borders. China can solve its domestic problems, such as separatism, by itself. In other words, the country is self-sufficient militarily, and only needs military cooperation under the SCO framework in order to free its hands if any conflict should arise that affects its interests in the region.

In the near future these circumstances may already be the source of serious conflicts, given the clear differences in the economic and political interests of Russia and China. The current problems between the region's countries over energy supplies disagreements within the SCO, and many other problems are obviously only the beginning of growing contradictions. It is clear that the Chinese understand this well and are prepared for a similar turn of events, in the military sphere as well.

V. Tsygichko

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Our own choice

Vitali,

The evolution of Russian foreign policy is a separate topic of conversation. Russia's "withdrawal" from the western orbit, moderate (thus far) anti-Americanism, and political rapprochement with and even formation of a bloc together with the PRC (for example, in the U.N.), are facts that are determined by the Kremlin's new course of action in the international arena. They are, however, the result of a conscious choice made by the Russian leadership, and not the result of a "Chinese attack."

Of course, the Chinese leadership considers rapprochement between Russia and the United States to be extremely undesirable, as it would make Russia an instrument of U.S. policy with respect to China. Nor would Beijing welcome a Russian rapprochement with Japan, if it is to the detriment of Chinese interests (for example, in the area of energy security).

I agree that the SCO can primarily be viewed as "China in Central Asia." With the help of the SCO, Beijing obtained the possibility of developing relations with five former Soviet republics without irritating Moscow. Russia, for its part, obtained the option of "watching over" the development of these relations and from time to time influencing them. For China, the initiative to create the SCO was a sign of the activization of foreign policy, which until the mid-1990s had remained fairly passive. For Beijing, the creation of the SCO also meant the formation of favorable external conditions for the stabilization of the situation in Xinjiang (which was traditionally called West Turkestan), as well as access to alternative energy supplies.

The SCO is a positive addition to regional security. First, because of the fact that its informal cochairmen are the PRC and Russia; second, because its members have come to include all of the Central Asian states, with exception of Turkmenistan; third, because states like India, Pakistan, Iran, as well as Mongolia participate in SCO work as observers. There is also the SCO-Afghanistan channel. The main areas of SCO activity—security and development—logically result from the approach of obtaining security *through* development. Here Moscow and Beijing are secretly in competition within the SCO framework. Russia does not want to allow the Chinese to get into traditional security issues (*bases-alliances-exercises-weapons*), but at the same time is jealous of Beijing's attempt to transfer the center of gravity to development issues (*credit-trade-investment*). The solution may be the division of spheres of responsibility, but Moscow, apparently, considers Central Asia to be a region where Russian interests must remain predominant in all fundamental areas.

D. Trenin

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Bad model

Dmitri,

In my opinion, Beijing has a lot of different plans. Its political plan is to try not to allow a rapprochement between Russia and the United States, Japan, and other western democracies, which would be able to prevent its plans for regional hegemony. That is why it is afraid of democratization in our country and is intensively pushing its own authoritarian political model on our political elite—successfully to date, unfortunately.

There are many propagandistic Chinese slogans that have now firmly entered into the lexicon of Russian politicians. This includes the "special Russian path towards democracy," "Russian society's unpreparedness for western principles and standards of democracy," and the "vertical of power," as well as other views that justify our country's slide into bureaucratic authoritarianism.

I have already mentioned Russia's importance for China as a stable supplier of energy as well as modern weapons and technologies. This is why China is doing everything it can to draw our country into its orbit of economic and geopolitical interests, including through the declaration of the friendship between our peoples and other measures, such as declaring the "Year of Russia" in China and the "Year of China" in Russia. All of this creates a facade, behind which hide utterly pragmatic purposes that by no means coincide with our national interests, since the prospect of becoming simply a supplier of raw resources to China is the worst future we can imagine. And we are already quite familiar with the concept of "friendship between peoples" from our recent communist history and know how that ended.

If we examine the economic side of the two countries' relationship, then we must first note the practical absence of Chinese investment in our industry, agriculture, and infrastructure. They are only prepared to invest money in our energy projects. This can be explained by two basic reasons. First, they don't need any extra competitors on our domestic and foreign markets. Cheap Chinese goods have taken over our shelves. Today these are not only consumer goods, but also electronics, automobiles, machine tools, and industrial equipment, and soon they will include high-tech goods too. All of this does not help in the development of our currently very weak industrial base. Second, the Chinese would like to preserve us as their source of raw materials and get control over our energy resources, by putting money into our projects. But the intensive development of our economy would require a sharp increase in domestic energy consumption, which undoubtedly would also affect the volume of energy supplied to China. Thus, the innovative development of our economy is by no means in their interest. These circumstances form the basis for China's economic policy with respect to Russia, as is confirmed by Sino-Russian trade statistics and the content of the majority of the agreements that have been concluded.

VT

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: It depends on us

Vitali,

The Chinese leadership is concentrating on geopolitics, the global economy, and global strategy. They consider democracy as a tool through which the United States is trying to promote its own concrete interests. In this they are united with the inhabitants of the Kremlin. The Chinese are not so much afraid of Russian democracy (they are more likely skeptical about its prospects), as they are of chaos and a return to the pro-American policies of the early 1990s.

Nobody from outside is pushing the authoritarian model on the Russian leadership. The responsibility for the state of the Russian political system lies with the Russian leaders who built

this system and the large part of the Russian population who support this system. The Russian political system will unavoidably change when interest groups mature and it can no longer satisfy these interests in its present form. Neither China, on the one hand, nor the United States, on the other, have anything to do with this.

Furthermore, there are clearly visible changes in Sino-Russian relations. CCP Chairman Hu Jintao's visit to Moscow in March 2007 demonstrated that Sino-Russian relations are becoming more and more pragmatic. At present Beijing is primarily interested in getting energy from Russia, and Moscow in increasing its economic return from ties with China. In this regard, the short passage in the Foreign Ministry's Survey of Russian Federation Foreign Policy dedicated to relations with the PRC is indicative: "the partnership between the two countries is not so much *strategic*, as *pragmatic*."

The development of Sino-Russian economic relations faces a number of problems. For instance, the price that the Chinese are willing to pay for Russian gas is several times lower than the price of gas on Gazprom's western European markets. The Chinese, for their part, are not satisfied with the quality of the Russian industrial products (commercial airplanes), which they have purchased. Russians sometimes hope for political deals (as they say, "in the name of improved relations"), an area in which the Chinese are particularly pragmatic. Russians will have to learn how to compete on the Chinese market, to look for niches where they can push their goods and services. Without this Russia will end up supplying energy and raw materials to China, as well as weapons and military technologies.

As for sober analysis, China will probably continue its upward trajectory and the space around it will continue to be twisted. Losing out to China in the area of development, Russia will likely "fall" in the direction of its eastern neighbor. It can be saved through accelerated self-development. Whether this project succeeds or not depends on Russians. We should not fear China, but the inability to retransform Russian society, the economy, and the political system into a viable and effective organism.

D. Trenin

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Younger brother option

We truly should not fear China, but clearly understand its strategy and long-term plans with regard to Russia in order to formulate sensible policies that correspond to our national interests on this basis. The current bilateral relationship is determined by the goals and current policies of both parties. Therefore, the assertion that everything depends on us ourselves and China plays no role here seems, in my opinion, to be an attempt to avoid impartial research and the consideration of China's strategic goals and practical policies vis-à-vis Russia, as well as to avoid the acute problems that must unavoidably appear in the process of realizing this policy. Unfortunately, our leaders, in going for a political bloc with China, do not understand or do not want to see the consequences of this course of action, which, if continued, will unavoidably lead our country to become the Middle Kingdom's "younger brother," and farewell to the great-power ambitions of our political elite. Finally, I would like to agree with you that only accelerated development will give Russia a chance not to become a Chinese protectorate.

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: It sounds too alarming

Vitali, I too would like to note the areas where our positions coincide. I agree with the need for impartial research and a discussion of China's strategic aims. I view the *code of silence* on this topic as a vicious matter, although it is possibly caused by the best of intentions ("not to provoke a neighbor," "not to wake evil," etc.). Finally, I am convinced that forming a strategic bloc

with China is not in the interests of Russia, and not just because any great-power ambitions will fall victim to it.

Sino-Russian relations are not only more complicated, but also more contradictory than they appear in the speeches of the Russian president and the CCP chairman. Russia's leaders, whatever they say publicly and however strongly they suspect the United States of trying to *drive a wedge* into "model" Sino-Russian relations, will not accept a *strategic* bloc with China. It's enough to analyze the real development of the two countries' relations in the energy sphere, or look more closely at the Shanghai Cooperation Organization, at the development of the whole system of relations in Central Asia. The Kremlin was not enthusiastic over China's test of an antisatellite weapon in early 2007. Russia's clear move to get away from the limits imposed by the U.S.-Soviet Treaty on Intermediate-range and Shorter-range Missiles (INF Treaty) is officially based on arguments about plans for the deployment of a U.S. antimissile system elements in Central Europe. The move, however, appeared much earlier than U.S. plans became known. Apparently, the real concern is deterring possible threats on Russia's southern and eastern borders.

However, I am not ready at this point to add China to the list of probable Russian adversaries. Although you don't say it directly, such a conclusion can easily be implied. This is methodologically wrong: everything for and against must be discussed, all sides of the problem investigated, and the dynamics of recent changes analyzed; otherwise, you cannot get a reliable conclusion. Instead, you will simply strike an "analytic alarm," which may be useful as a counterweight to nonjudgmental perceptions of our neighbor, but will also be as one-sided as the absence of any criticism.

Your DT

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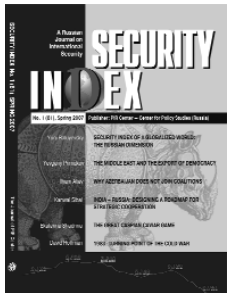

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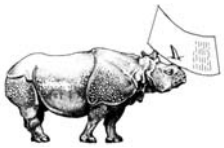


Laura Holgate

NUCLEAR FUEL RESERVE: SOME OUTLINES

On September 19, 2006 at the 50th IAEA General Conference the Nuclear Threat Initiative has presented what we believe is a bold challenge and call to action for member states to take a concrete step towards fuel supply security. I will offer some additional detail on our thinking and suggest areas where further discussions and analysis will be required.

NTI Co-Chairman Senator Sam Nunn described the risks we face in his speech earlier today:

"As more nations seek nuclear energy to meet their development needs, more nations will weigh available options to determine what for them will be the most secure, and most economical way to ensure a reliable supply of nuclear fuel. Some countries will consider building indigenous fuel cycle facilities – a costly choice that would spread these capacities throughout the world and add to the proliferation risks that are inherent to these technologies. Other states will prefer – for economic and security reasons – to import nuclear fuel from other suppliers. It is in our collective security interest to ensure that states have confidence in electing this second path."

Toward this end, NTI is prepared to contribute $50 million to the IAEA to help create a low enriched uranium stockpile owned and managed by the IAEA. We envision that this stockpile would be available as a last-resort fuel reserve for nations that have made the sovereign choice to develop their nuclear energy based on foreign sources of fuel supply services—and therefore have no indigenous enrichment facilities.

NTI's contribution is contingent on two conditions, provided they are both met within the next two years: (1) that the IAEA takes the necessary actions to approve establishment of this reserve; and (2) that one or more member states contribute an additional $100 million in funding or an equivalent value of low enriched uranium to jump-start the reserve.

Nothing in NTI's proposal would limit the rights of nations to pursue peaceful nuclear technology. Our proposal is designed to reinforce the sovereign choice of nations who decide to rely on foreign sources of nuclear fuel. I also want to make clear that the reserve must be designed so as to avoid any interference in the historically efficient and effective operation of nuclear fuel markets.

I want to emphasize that the specific elements of the reserve's arrangements would be up to the IAEA and its member states to decide. NTI's only conditions are that the IAEA take steps to authorize the reserve and that member states match NTI's award on a two-to-one basis. Nevertheless, a number of issues will need to be worked out by the IAEA and member states; I will outline some of these issues today.

RESERVE CONTENTS

One of the first decisions to be made will be the reserve's contents. In order to maximize the flexibility of the reserve, it should probably be in the form of uranium hexafluoride, at an enrichment of 4.9 percent. It would not seem realistic to conceive of a reserve that holds manufactured fuel rods or assemblies given the uncertainty about the customers who would actually need to use the material.

We believe that the minimum credible amount of low enriched uranium held by this reserve would need to be enough LEU for a full core for a standard power reactor. This should be in the range of 50-60 metric tons at 4.9% enrichment. NTI's $50 million contribution combined with the additional $100 million from member states would confidently cover the fuel requirements for at least one full core for a standard nuclear power plant, plus transportation and storage costs. The ultimate quantity of low enriched uranium held by the IAEA as a reserve would have to be determined through an iterative process involving supplier states, customer states, and the IAEA to determine how much uranium is needed to reassure potential customers while avoiding undue market interference. One would expect this reserve to grow as the nuclear power market grows in the future.

NTI has been in discussions with Russia on the potential for an initial purchase of low enriched uranium for this reserve, but there are several sources of such material. To the degree that the low enriched uranium that goes into the reserve is derived from blending down highly enriched uranium, that would be another nonproliferation benefit, but it is not necessary to the effective functioning of the reserve.

STORAGE

Another issue for decision is the location of the reserve. Obviously, the IAEA cannot house an LEU reserve in its Vienna headquarters—a member state would have to serve as the host country for the reserve. In order to be seen as a true back-up to an extant commercial fuel service contract, the reserve almost certainly has to be based outside the six major fuel suppliers. The ideal location would be in a facility that is already licensed to handle low enriched uranium hexafluoride, in order to minimize the need to create new infrastructure. It is inconceivable that material owned by the IAEA would not be stored under IAEA safeguards, and the Agency might determine that an Additional Protocol would also need to be in force. The Agency might further determine that membership in the Nuclear Safety Convention and the Convention on Physical Protection of Nuclear Materials would also be required of the host nation. The costs of storage could be borne by the Agency via a contract with the storage site operators or provided as an "in kind" donation by the host nation, and would be subject to the safety and security regulation of the host state. As the reserve's stocks grow over time, there may be value in having more than one host state as an additional measure of reassurance to potential customer states.

ACCESS

The terms of access would be among the most sensitive aspects of this reserve, and as such would be an extremely important issue to discuss among member states. A key requirement is likely to be that a state wishing to avail itself of the reserve meet their nonproliferation obligations. As with the storage considerations I just mentioned, the LEU supplied by the IAEA would almost certainly have to be used in a reactor that is under IAEA safeguards, and an Additional Protocol might also be required. Participation in the Nuclear Safety Convention and the Convention on Physical Protection of Nuclear Materials would also be reasonable expectations of a customer state. The most important attributes of the access conditions are that they be clearly delineated in advance, and that the judgment on whether a particular state meets the conditions be structured in such a way as to be objective, non-discriminatory, and non-political. This may require some novel decision-making techniques to insulate such decisions from political influence. For example, how would the determination of whether a potential customer state is "in good standing" in meeting its nonproliferation obligations be made?

Would this be a Board of Governors decision, the Director General's decision, or might a special panel made up of representative member states' designated arbitrators make the determination? Some states may require that the release mechanism be established and that pre-approved drawing rights be considered and guaranteed before they are willing to rely on such provisions as a back-up to fuel imports.

PRICING

One key question in considering the impact of such a reserve on the commercial fuel market is the price at which states can gain access to the reserve's LEU. Because the reserve would be designed to reinforce fuel import mechanisms, a contract will generally be in place when a disruption occurs that would trigger a customer state's claim on the reserve. One approach that would guarantee market stability and predictability for customers would be to fix the price for the reserve's LEU at the price contained in the existing contract that is not being fulfilled. If the contract price is significantly below market value, it might create challenges for the Agency to replenish the reserve and member states may be called on to make up the differences between contract price and real-time market prices, but it would prevent states from manufacturing a commercial supply dispute in hopes of obtaining a more favorable price from the Agency's reserve.

FABRICATION

As noted above, the diversity of reactor types among potential customer states argues against holding manufactured fuel in the reserve itself, but that means that the fabrication step needs to be addressed in the design of the reserve. If a state has a fuel import contract in place, fabrication will typically be included in that contract, likely at a different facility than the enrichment facility and, in some cases, in a different country. Whether or not access to fabrication services is threatened when an LEU supply breakdown occurs will differ from case to case. There may be value in developing pre-licensed alternative fabricators who can be turned to should the Agency's LEU reserve be called on by a customer state. This complex issue will require further consideration by member states and industry experts.

EXPORT CONTROL

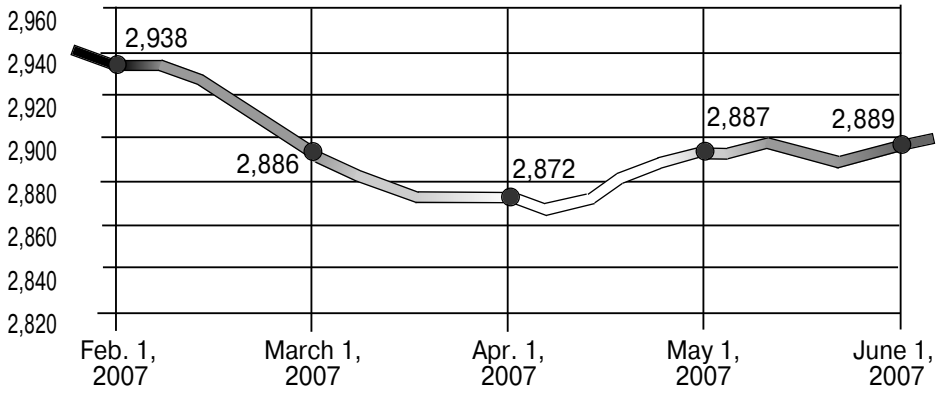
Exports of nuclear materials and technologies are governed by a series of complex, interlocking national and international laws, procedures, and institutions. The basic premise of such rules is to ensure that exported nuclear materials are used only for peaceful purposes and that they are not retransferred if doing so might weaken those assurances. States wishing to provide storage and fabrication services for the Agency's LEU reserve would need to be prepared to make any necessary adjustments in their national export control procedures to guarantee timely and predictable transfer of the Agency's LEU into and out of their national territory. Institutions such as the Nuclear Suppliers Group may also need to develop special procedures to ensure that the Group's policies and practices accommodate the reliable administration of the reserve. This is another area that definitely requires an in-depth discussion among member states and experts to determine how simultaneously to assure eligible customer states that the LEU will be available to them when they need it and supplier states that the material they donate or sell to the Agency will be used appropriately.

PATH FORWARD

These are some of the issues associated with establishing an IAEA fuel reserve, but we believe that they can all be managed and resolved in ways that satisfy potential customer states, supplier states, the nuclear industry, and the Agency itself. There are undoubtedly others that will be encountered along the way. Again, I want to make clear that these ideas are offered in order to advance the discussion of an IAEA fuel reserve; decisions are, of course, the purview of the

Agency and its member states. The key challenge is to begin to address these questions right away so that states can evaluate whether an IAEA fuel reserve meets their requirements for nuclear energy security. To this end, we encourage the IAEA Secretariat to carry out formal and informal consultations with member states and experts in order to prepare the matter for the Board of Governors' consideration. As the demand for nuclear energy grows, we will need creative ways to avoid an associated growth in nuclear risks. All nations share an interest in ensuring a safer, more secure nuclear future.

Figure 1. **The *iSi* International Security Index (January 2007–May 2007)**



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- ***Dmitry Evstafiev.* A VIEW BY A *RUSSIAN CONSERVATIVE*: A PREMONITION OF GLOBAL CHANGE**
- **Marian Abisheva, Mustafa Alani, Sergio Duarte, Konstantin Eggert, Andrei Kortunov, Harald Mueller, William Potter, Evgeny Satanovsky, and Alexander Saveliev. COMMENTS BY MEMBERS OF THE INTERNATIONAL EXPERT GROUP**

THE INDICATORS OF *iSi* INDEX – A COMPREHENSIVE INTERNATIONAL SECURITY INDEX

As explained in *Security Index* No.1 of 2007, since June 2006 the PIR Center has been developing a project to calculate an International Security Index (*iSi*)—a comprehensive index of the level of international security. The aim of *iSi* is to provide quantitative indicators that reflect the dynamics of international security trends. The *iSi* index is meant to demonstrate the extent to which the international security situation differs from the "ideal" at each point in time. It also indicates how various specific military and nonmilitary factors are affecting international security. *iSi* is determined in accordance with an original method developed by the PIR Center. It indicates the general level of the state of international security in the military, political, economic, and environmental spheres. The "ideal" situation was determined to number **4,210 points**; i.e., the closer *iSi* is to this number, the more secure the world is. Vice versa, the lower, the higher the level of *iSi* insecurity.[1]

The PIR Center's monthly calculation of *iSi* is accompanied by interviews with our **International Expert Group**, which includes representatives from Russia, Kazakhstan, Brazil, India, China, the United States, France, and Saudi Arabia, as well as other countries. The evaluations of these experts in no way influence the calculation of the Index. Nevertheless, they make it possible for us to examine our calculations: do the evaluations of the global security situation in June or April mesh with the dynamics observed in the Index of the last few months? Which events effected the indicators positively and which negatively? Finally, what are the prospective trends of the *iSi* Index figure in the coming months?

In **December 2006,** *iSi* totaled **3,041 points**. **In January 2007** it **fell by 103 points** for a total of **2,938 points**. In **February** and **March 2007** the Index continued falling and reached **2,886** and **2,872** points, respectively. In **April 2007** *iSi* started growing and reached **2,887 points**. The *iSi* Index figure for **May 2007** amounts to **2,899 points.** This figure is an increase of **12 points** over April 2007.

Among the main factors influencing the *iSi* dynamics for the period we can outline following:

- The "cooling off" of Russia's relations with Western countries (the United States, first and foremost) that we observed in the fall of 2006 only increased over the recent period. The December 2006 U.S. announcement of the possible siting of a U.S. missile defense system in the countries of Eastern Europe was further presented in more detailed form. Further, the discussions in the U.N. Security Council on a Kosovo resolution, on the contents of which Russia and the Western states hold diametrically opposite views, affected the general international security situation in an extremely negative fashion as well. All of this became the reason for several brusque statements by Russian political and military leaders (the "Munich speech" of Russian President Vladimir Putin, the plans for an "asymmetric" response to the U.S. initiative, Russia's plans to exit the CFE, etc.).
- The Iranian nuclear problem posed one of the most serious challenges to international security in December 2006-May 2007. During this period, the U.N. Security Council adopted two resolutions on Iran: Resolution 1737 in December 2006, and Resolution 1747 in March 2007. However, Tehran, calling both documents "illegal," refused to abide by them. Furthermore, in April 2007 Tehran announced the resumption of its uranium enrichment program (and the IAEA has confirmed that this has occurred), as well as its intention to withdraw from the NPT.
- The elevated level of terrorist activity in Iraq and Afghanistan has already become a "traditional" factor. During this period, bloody terrorist acts occurred nearly every day in these countries. Taliban fighters were active in Afghanistan, both participating in military actions against coalition forces and preparing and undertaking terrorist acts.
- As for the North Korean nuclear problem, although in the fall of 2006 it had a sharply negative influence on the *iSi* Index (particularly due to the DPRK's nuclear test), in early

2007 the Six Party Talks saw some progress. An agreement was reached whereby Pyongyang promised to give up the development of its nuclear program in exchange for economic assistance from the global community.

- The post-Soviet space was also marked by instability during this period. Some of the most acute problems that should be mentioned include the Russian-Belorussian gas conflict, the prolonged domestic political crises in Ukraine and Kyrgyzstan, as well as the worsening of Russian-Estonian relations in the spring of 2007 after the Estonian authorities moved a Soviet war memorial.

In general, the international political situation in December 2006-May 2007 was distinguished by its instability. The security challenges were mostly military and political in nature, with terrorist activity fairly high as well. A detailed chronology of the events from December 2006 through May 2007 that influenced *iSi* can be found on the PIR Center website, at: **http://isi.pircenter.org.**

A VIEW BY A *RUSSIAN LIBERAL*: BLOOD AND IRON

For the most part, the many forecasts of future international developments that emerged after the turbulent events of summer and fall 2006 have failed to come true. There was no new war between Israel and Hezbollah. The November 2006 Democratic victory in the U.S. Congress did not cause any significant change in U.S. foreign policy, as many predicted. Instead of the anticipated escalation of tensions in Northeast Asia, the situation in the region has become more or less stable after members of the Six-Party Talks agreed on the freeze of the North Korean reactor in exchange for the provision of energy supplies to the country.

Overall, the global political arena maintained its normal state throughout the winter of 2006-07. Violent clashes between various religious and ethnic groups in Iraq continued, claiming thousands of lives each month. The Taliban fighters continued to target coalition troops in southern Afghanistan. The Iranian leadership ostentatiously persisted in rejecting any compromise on Iran's nuclear program and continued to progress towards obtaining a nuclear weapon. Africa's civil wars and ethnic conflicts did not show signs of reaching an end, but compared to the events in the Middle East they attracted relatively little publicity. Finally, the United States and a number of European countries continued to disagree on some of the major international security issues of the day.

Against this global political backdrop, all in all quite routine and even somewhat dull, Russian President Vladimir Putin's February 2007 speech in Munich captured significant attention. As a matter of fact, his address was perceived as a declaration of a new Cold War. Statements and decisions by the Russian leadership following the Munich speech deepened this impression. Russia's military immediately seized the opportunity by declaring, among other things, the need for Russia to withdraw from the Treaty on the elimination of intermediate-range and shorter-range missiles (INF Treaty). Instantly, a number of questions arose, including the exact reasons for yet another twist in Russian political thinking, the extent to which the militant rhetoric reflected true changes in Russia's strategic choices in the global arena, and potential ramifications that Russia could face if it confronted the West. The *Survey of Russian Federation Foreign Policy* published in late March 2007 not only failed to provide answers to these questions, but clearly demonstrated a doctrinal crisis in Russia's Ministry of Foreign Affairs along with its incapacity to formulate an appropriate view of the outside world and the country's foreign policy strategy.

Naturally, the enduring critical international security issues gave rise to concerns, but it has been most disquieting that neither the international community in general, nor the most pow-

erful and influential states—starting with the United States—were capable of overcoming the inertia of their own political thinking and taking resolute steps towards innovation, which could at the very least discover new and potentially more effective approaches for resolving emerging challenges, if not solve them all together.

Nevertheless, we should not rule out the possibility that the current standstill in world politics is in reality just the calm that precedes the storm, with the Middle East the epicenter of this storm. This region is of crucial importance both to the world economy and to global security. The burning issues in this part of the world are enmeshed together and have become increasingly difficult to tackle, while political and diplomatic efforts seeking to address them are for the most part proving unproductive. Hence, there is a growing probability that in order to stop the geopolitical collapse of the Middle East, force may be used, even though the Iraqi experience shows that military efforts may lead to further political and military destabilization. Finally, if the upcoming months show the failure of the United States to halt the escalation of dangerous trends linked to the Iranian nuclear program and the activity of the Taliban in Afghanistan, the role of the United States as the sole truly global superpower will be called into question.

THE MIDDLE EAST: *BUSINESS AS USUAL*

Throughout the winter of 2006-07, the Middle East remained the source of the major events in international politics, and is likely to preserve this status for a long time. Along with the range of challenges traditional for this region, such as the situation in Iraq, Iran, and Afghanistan, as well as the Israeli-Palestinian standoff, two new potential zones of instability have recently emerged.

The first of them is related to the resignation of Lebanon's five Shi'ite cabinet members allied with Hezbollah, which created a path for a new potential conflict in Lebanon between the country's key political forces, represented primarily by the Fuad Seniora government, and the extremist groups headed by Hezbollah. Quite predictably, Hezbollah refused to comply with the demands of the UN Security Council and disarm its tactical forces. While Hezbollah benefits from Syrian support, the legitimate government enjoys backing from the United States, France, Saudi Arabia, and several other Arab states. If the situation in Lebanon continues to develop in line with existing trends, the country risks turning into another theater of war both between the West and Islamic radical groups, as well as between Sunni and Shi'ite Muslims.

Marian **Abisheva (Kazakhstan)**, Deputy Director of the Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan – by phone from **Astana**: *I agree on the general dynamics since the beginning of 2007. These figures adequately reflect the changes in world politics. The most negative events which had a harmful influence on the international security climate in Central Asia were those connected with the political confrontation in Kyrgyzstan. No doubt Kyrgyzstan is the zone of instability in Central Asia. In addition to the situation in Afghanistan, the one in Iran and Iraq is very far from ideal. However, in the nearest months I expect a slight increase in* iSi*, because I don't see additional troublesome factors.*

Another emerging are of volatility is Turkey. In April 2007, the Turkish parliament chose Abdullah Gul, the minister of foreign affairs and a member of the ruling Islamic Justice and Development Party (AKP), as nominee for the Turkish presidency. Through this candidacy, the Islamic grouping could obtain virtually complete power in the Turkish government. The opposition immediately appealed the vote results, citing the ambiguity of the quorum required for making this type of decision. Later, Turkey's military command intervened, asserting the participation of Turkey's armed forces in the discussion on the country's secular development and their role as "absolute defenders" of this development course. The military's declaration played a crucial role in the decision to hold early general elections to parliament in July 2007.

Mustafa **Alani (Iraq)**, Senior Advisor and Director for Security and Terrorism Studies, Gulf Research Center – by phone from **Dubai**: *If we sum up the mounting international tension over the Iranian nuclear program, extremely complicated situation in Iraq, and growing tensions in Lebanon and Palestine, we see that the situation in my region is far from improving. And I don't see any improvement in the near future.*

At the same time, it demonstrated that the army was not going to stay away from politics with all that this implies.

Over the past several months, the situation in Afghanistan has not shown any new signs of improvement. At the November 2006 NATO Summit in Riga, it was decided that in 2008 control over the situation in the country would be transferred to Afghanistan's army and security forces, which are currently being formed. By 2008, the Afghani police force is expected to grow from 61,000 to 82,000, and the army from 32,000 to 70,000 troops. In addition, special border control and counternarcotics units will be established. A number of factors cast doubt on the possibility that these plans will be successfully implemented. First of all, several major NATO members, starting with France, Germany, Italy, and Spain, are refusing to send their troops to combat regions in southern and southeastern Afghanistan. As a result, the brunt of the actual fighting with the Taliban lies heavily on U.S., U.K. and, to a lesser degree, Canadian troops. The key argument put forth by the above-mentioned European powers in defense of their policy stance is the excessive role that the United States attributes to military operations. In the opinion of these countries, the proper countermeasures against the Taliban and other extremist forces should be based on encouraging the country's economic development and addressing the most urgent social and economic issues. This approach is probably correct in the long run, but its results would not be seen for at least another several years, whereas the Taliban forces could attempt a major attack in the spring and summer of 2007, which could only be repelled through the use of military force.

Another factor that puts successful improvement of the situation in Afghanistan in danger is the situation in tribal zones and other vast areas along the Afghan-Pakistan border. Pakistani government and international coalition forces have virtually no control over the majority of these areas. U.S. directives for Islamabad to step up its efforts in countering the Taliban and al-Qa'ida activity in this region have spurred growing anger and dissatisfaction among the Islamic groups in the Pakistani establishment, including the army and intelligence agencies. Experts believe that Pakistan's secret service is relatively effective in pursuing and countering al-Qa'ida activities, but provides various types of assistance to the Taliban. The position of General Pervez Musharaf, who is forced to balance between the United States and the Islamic groups, has become ever more challenging, which in the relatively near future may have quite unpleasant consequences both for the current Pakistani leader and for the region as a whole. Finally, the prospects for the Afghani government headed by Hamid Karzai to form an operational army and police force remain quite unclear.

In short, neither the government in Kabul nor the international coalition forces have the necessary military contingent to establish effective control over Afghanistani territory, especially over the country's southern and southeastern parts. Therefore, a rapid stabilization of the situation in Afghanistan (within a year or year and a half at most) is not likely. At the same time, if NATO decides to withdraw its troops from Afghanistan, it is almost certain that Karzai's government will be replaced by the Taliban. If that occurs, it would be a great geopolitical failure for NATO and the Western powers in general. None of the Western leaders is keen on seeing this happen. Hence, operation Enduring Freedom will go on as planned, international coalition forces will keep their troops in Afghanistan, and U.S. troops will maintain their presence in Central Asia, but NATO's ability to effectively provide the necessary security measures outside of its sphere of influence will continue to be called into question.

The developments in the Palestinian territories are also no reason for optimism, despite the February 2007 success of Hamas and Fatah in finally forming a national unity government through Saudi Arabia's mediation. This progress may stabilize the situation in the West Bank and the Gaza Strip to a certain degree, but will be unlikely to lead to a breakthrough in the

Israeli-Palestinian conflict, since Hamas still refuses to recognize Israel's right to exist. In its turn, Israel, with U.S. support, refuses to recognize the Palestinian unity government as long as it includes Hamas representatives. This policy in Tel Aviv draws frequent criticism from those circles (both in Israel and the West) that believe in the strategy of engaging Hamas, thinking that cooperating with terrorists may pay off better than fighting them. At the same time, disagreements between the moderate, so-called "political," wing of Hamas, and its military units perceived as being extremist are also noteworthy. There is, however, no certainty that the strategy of engaging extremist and terrorist regimes and movements is well-founded. Once again, the question that arises is the following: can mild treatment of such political constituents change their very nature?

All the challenges described above seem relatively insignificant compared to the situation in Iraq and the recent developments around the Iranian nuclear program. The situation in Iraq is growing increasingly complicated. Ethnic and religious clashes are turning into a civil war that spans much of the Iraqi territory, first and foremost cities and provinces where Sunni and Shi'ite Muslims or Arabs and Kurds live in close proximity. The flow of migrants to neighboring countries is reaching unprecedented levels: according to the United Nations, 2 million Iraqi citizens have become refugees and another 1.8 million are listed as displaced persons, having been forced to leave their homes and move to regions where people of similar religious beliefs or ethnic origin are in the majority. These events have created fertile soil for the emergence and spread of extremist sentiments and terrorist movements. Separatist ambitions in the region are growing stronger. Economic challenges are deepening. The prospect of other states intervening in Iraq is becoming increasingly possible.

Sergio **Duarte (Brazil)**, Ambassador, Chairman of the Non-Proliferation Treaty Review Conference (2005) – by email from **Brasilia**: *In my region (Latin America) the security situation is permanently influenced by the imbalance between the military might of the USA vis-à-vis the rest of the region. As for recent negative events, I would mention the nationalizations of the Brazilian oil company facilities in Bolivia by the government of Mr. Evo Morales and the potential establishment of a leftist (socialist-populist) axis comprising Venezuela, Bolivia, and Ecuador. A positive influence has been the consistent climate of good will and understanding that exists among all countries in the region, despite transitional differences. The constant exchange of high level visits contributes to the maintenance of this climate. I believe the* iSi *will not experience major shifts. The Iran question continues to be treated through diplomatic channels and rhetoric between the U.S. and Iran has subsided somewhat. Divergences between Russia and the U.S. on the placement of anti-missile components in Eastern Europe may not escalate due to other interests of both countries.*

For example, Syria is providing support to the remaining Ba'ath party cells in Iraq. Moreover, Syria's territory continues to be used for the transit of foreign militants and Sunni terrorists. Iran, in turn, is financing, arming, and providing logistics to militant units of Shi'ite extremist organizations. Saudi Arabia, Jordan, Kuwait, and Turkey are all trying, among other things, to neutralize the influence of Shi'ite Iran in both Iraq and the region as a whole. In addition, Ankara is concerned with the developments in Iraqi Kurdistan and the prospects for the formation of a *de jure* or *de facto* independent Kurdish state, which would almost inevitably become the center of gravity for the Kurdish population of southeast Turkey. It is no coincidence that in late February 2007, General Yasar Buyukanit made unambiguous threats towards the leadership of Iraqi Kurdistan, threatening a direct military intervention in the event of the country's "break-up," i.e. if Turkey's southeastern provinces join the prospective Kurdish state. Thus, there has been a real possibility of Iraq becoming something of a "black hole" in the Middle East, a sort of "geopolitical funnel" pulling in neighboring states.

The question of whether or not an "engagement strategy" applied to extremist regimes is effective becomes especially relevant in relation to the

actions of the current Iranian leadership, which is stubbornly moving towards developing a nuclear weapon and sabotaging the demands of the UN Security Council in the most provocative way. Predictably, Tehran flagrantly ignored UN Security Council Resolution 1696, adopted on July 31, 2006. Following this, the UN Security Council adopted Resolution 1737 in December 2006. The undeniable advantage of the new resolution is the fact that it denounces the obstructionist policies of Iran; however, it also shows the incapacity of the UN Security Council to develop effective measures that would be capable of bringing leaders in Tehran back to their senses. To a large degree, this is the result of the "double standards" policy of Russia and China, as both countries press to minimize the sanctions against regimes caught developing their own nuclear weapons and thus violating the obligations of the Non-Proliferation Treaty.

UN Security Council Resolution 1737 states that "Iran has not established full and sustained suspension of all enrichment-related and reprocessing activities [...], nor resumed its cooperation with the IAEA under the Additional Protocol, nor taken the other steps required of it by the IAEA Board of Governors, nor complied with the provisions of Security Council resolution 1696 (2006)."[2] The resolution also notes that the Security Council is acting under Article 41 of Chapter VII of the Charter of the United Nations. In other words, it recognizes that Iran's actions constitute a threat to global peace, the elimination of which requires international sanctions that do not, however, provide for the use of force.

Based on this information, in December 2006 the Security Council voted that Iran must stop "all enrichment-related and reprocessing activities, including research and development" as well as "work on all heavy water-related projects, including the construction of a research reactor moderated by heavy water."[3] Further on, the Security Council required all states to take the "necessary measures to prevent the supply, sale or transfer directly or indirectly from their territories, or by their nationals or using their flag vessels or aircraft to, or for the use in or benefit of, Iran [...] of all items, materials, equipment, goods and technology which could contribute to Iran's enrichment-related, reprocessing or heavy water-related activities, or to the development of nuclear weapon delivery systems."[4] In other words, the evaluation of Iran's actions is quite clear, and the requirements of the UN Security Council are fairly explicit.

Yet it has been clear from the start that measures designed by the Security Council to encourage Iran to comply with its demands would be ineffective. Indeed, the resolution simply calls for all states to freeze financial assets and economic resources owned or controlled by Iranian individuals and legal entities who participate in the development of nuclear weapons and their delivery systems. The list of 12 such entities and 12 individuals whose assets are subject to a freeze include the Atomic Energy Organization of Iran (AEOI) and the Defense Industries Organization, as well as, for example, General Yahya Rahim Safavi, commander of the Islamic Revolutionary Guards. As could be expected, these sanctions failed to have any effect on the Iranian nuclear program. Quite possibly, the AEOI and General Safavi do not keep their assets in Western banks, or at least do so under different names and credentials.

UN Security Council Resolution 1747, adopted in late March 2007, does not resolve the Iranian nuclear issue either. As a matter of fact, the only difference from the December 2006 resolution is the more extended list of Iranian entities and individuals who are subject to specific, yet not overly harsh, sanctions.

The developments in the Middle East bring up an ever more pressing question: what is to be done? This question first emerged in the 19th century among the Russian pseudo-liberal *intelligentsia* concerned with their own social vulnerability. Today, this question is a source of growing distress among political elites of the world's most powerful state.

THE UNITED STATES: BEFORE A CHANGING OF THE GUARD

The November 2006 midterm congressional elections were in a certain sense a referendum on U.S. policies in Iraq, and suggested that a Democrat victory in the approaching 2008 presidential election is nearly inevitable—it could only fail to come to pass if the present adminis-

tration undertakes some successful and atypical measures that can radically turn the tide either in Iraq, Iran, or Afghanistan.

Harsh criticism of the war in Iraq was the Democrats' key bargaining chip that they successfully used to appeal both to the American public's natural fatigue with the war proper and, more importantly, to their growing conviction of the lack of prospects for the U.S. military presence in Iraq, as the military has not been able to stop either the civil war or the growing wave of terrorism in the country. On the eve of the midterm elections, 61 percent of Americans opposed the war in Iraq, and 56 percent believed that it made the United States more vulnerable to the threat of terrorism.

Nonetheless, the new balance of power between the newly-Democratic Congress and the presidential administration did not spur the formation of a bipartisan foreign policy, particularly on the issue of Iraq. One of the key reasons for this has been the fact that the Democratic Party has virtually no broad-based foreign policy agenda that could obtain the approval of at least the majority of influential party members, if not all of them. In particular, by spring 2007 Democrats had not come up with a unique standpoint on the most pressing challenge of U.S. foreign policy: deployment of U.S. troops in Iraq. Senator Barack Obama—a rising, though somewhat peculiar star of the Democratic Party—insisted on the immediate withdrawal of U.S. troops from Iraq. The experienced politician Senator Joseph Biden advocated the proposal that Iraq be split into three separate and virtually independent entities, each of them becoming home to a distinct ethnic or religious group. Howard Dean, Chairman of the Democratic National Committee spoke in favor of a phased redeployment of the U.S. military contingent in Iraq. Senator Hilary Clinton, the most likely presidential contender from the Democratic Party, on the other hand, voted in favor of the war in Iraq and is now using all means possible to reinforce her relations with the military.

Yet the problem does not lie in disagreements between various Democratic leaders alone. The more important challenge is the Democratic party's understanding that in the event of a highly possible Democratic presidential victory, the task of solving the toughest issues in the Middle East would become their responsibility—and that at a time when neither they, nor any other segment of the U.S. political establishment, possesses any real solution to the problem. Given all of this, the Democrats basically have just one source of leverage over foreign policy, the administration's course of action in Iraq in particular. This leverage is their control over the budget and option to cut expenditures on the relevant budget items. However, if the Congress were to approve budget cuts for the war in Iraq, the Democratic Party would immediately be accused of leaving U.S. soldiers in Iraq without adequate resources.

There is also no clarity on the type of approach that the Democrats may use in the other key area of U.S. foreign policy—the country's relations with China. Many Democratic leaders in Congress have always viewed China with suspicion and openly showed their preference for Taiwan. For instance, influential Congressman Thomas Lantos has often spoken of China as a "troublemaker," and Sherrod Brown, co-founder of the Congressional Taiwan Caucus, has been recently elected Senator. In addition, the seat of the Speaker of the House of Representatives went to Nancy Pelosi, renowned for her critical appraisal of human rights violations in China and distortions in Sino-American trade relations. In general, compared to the Republicans, the Democrats are much more concerned with the rapidly growing U.S. trade deficit vis-a-vis China, which in 2006 exceeded $180 billion. Hence, if Democrats come to power in 2008, U.S. policy towards China may take on a harsher and more ideological nature. Similar changes may occur in U.S. relations with Russia, as the Democrats are traditionally more sensitive to displays of authoritarian power and human rights violations than their Republican opponents.

Actual U.S. policy in Iraq remained unchanged. Chances are that Donald Rumsfeld's resignation was a tactical move that the administration used to deflect criticism away from the U.S. President George W. Bush for the failure in the Middle East. In any event, his resignation did not initiate a search for a new strategy that would take into consideration lessons drawn from the war in Iraq. On January 10, 2007, Bush announced the enlargement of the U.S. military contingent in Iraq by another 21,000 troops. The Democrats failed to get the Senate's approval for a resolution condemning this policy choice. Along with increasing the U.S. military pres-

Konstantin **Eggert (Russia)**, Editor-in-Chief of the BBC Russian Service Moscow Bureau – by phone from **Moscow**: *The causes of the slight increase in* iSi *were due to the fact that the expected Russian-Western confrontation over the Iranian nuclear program didn't happen and, secondly, the political crisis in Ukraine was settled without the use of armed force. The most negative impact I would call the events in Russian-Estonian relations. There was a substantial growth of mistrust in Russia, as a country whose policy towards its neighbors is irrational and is based on the logic of domestic politics.*

ence in Iraq, the administration is trying to transfer the burden of pacifying the warring Iraqi factions to the Iraqi police and army, which are currently being formed. The U.S. military is expected to act as advisors and ensure safety in the relatively more secure areas and certain critical zones, including Baghdad.

Along with reinforcing the U.S. military component in Iraq, there have been efforts to involve Syria and Iran in stabilizing the country. Both states have a major impact on the situation in Iraq. At first glance, the idea deserves consideration. The question, however, is *what* Washington can offer Tehran and Damascus in exchange for their assistance in resolving the crisis in Iraq. The diplomats have initiated some cautious contacts but, predictably, they have not brought any significant results—the parties simply exchanged mutual recriminations. That is understandable: Tehran is using its Shi'ite supporters in Iraq as one of its key bargaining tools in negotiations with the United States, hoping to force Washington to make concessions on Iran's nuclear program. Washington can hardly find this trade-off acceptable.

Without a doubt, Iraq remained the most painful foreign policy challenge the United States had to face in the winter and spring of 2006-07. That said, U.S. leadership's decision to increase the country's military contingent by 21,000 troops was probably the least appropriate of all possible options. The number of additional troops is too few to have any real influence on the balance of power in Iraq, especially considering the continued cuts in the military contingents of other international coalition members stationed there, including the United Kingdom. At the same time, this decision angers the public both in the United States and its allies. It shows that the White House is prepared neither to withdraw from Iraq nor forcefully to suppress Sunni and Shi'ite extremist groups—either through the use of its own resources or, for example, by partially relying on Kurdish units. At the same time, the United States is neither ready to split Iraq into three separate entities, nor to implement any other radical measures capable of bringing the situation out of deadlock.

Undoubtedly, the withdrawal of U.S. troops from Iraq or the country's split into smaller ethnic or religious entities may lead to a steep escalation of violence both in Iraq and the region as a whole, but in the end it could result in a new and more stable realignment of forces. Notably, Fred C. Iklé, the ideological leader of many current supporters of hard-line defense and security policies and a member of the Pentagon's Defense Policy Board, declared: "Enormous and incredible mistakes in Iraq may end up driving us out, but if we handle the exit correctly it will not make the US more vulnerable, and can be made worse for our jihadist adversaries who are killing each other."[5] This standpoint has a certain logic, considering that the clashes between radical Sunni and Shi'ite factions are bound to intensify after the international coalition troops withdraw from Iraq. Eventually, the extremists on both sides will exhaust their resources in bloody internecine fights, whereas moderate circles loyal to the United States will see their influence grow and will be able to get ahead.

Nevertheless, this possibility also presents certain risks. The emergence of a *de jure* independent state of Kurdistan will most likely grow into a center of gravity for Kurds living in Turkey and Iran. Consequently, this will lead to major resistance against Turkey, the key U.S. ally in the region. There is much speculation that Iran's influence in the southern part of Iraq, mostly inhabited by Kurds, may grow considerably, which by no means meets U.S. interests. According to the Western media, one of the most powerful opponents of this option, as well as the withdrawal of U.S. troops from Iraq, is the CIA. The agency justifies its views first and foremost by the likely creation in western Iraq of a powerful base for international Islamic terrorism.

At the same time, it claims that the emergence of a Kurdish state will lead to a steep increase in Iran's presence in a political environment where a military operation against Iran may become a reality. On the other hand, it is also quite possible that Shi'ite leaders in southern Iraq may not wish to turn into Tehran's satraps or marionettes. In that case, they could become a great asset for the United States in its future operations against Iran.

TURKMENISTAN AFTER TURKMENBASHI

The death of Turkmen dictator Saparmurat Niyazov, better known as the "Father of all Turkmen" (that is how the title Turkmenbashi is translated), temporarily drew the world's attention to this small gas-rich country lost in the sands of the Karakum desert. The world press, and especially the Russian media, eagerly discussed whether the dictator died of natural causes or was poisoned by members of his inner circle angered by his extravagant escapades. The media enthusiastically argued about who will inherit the billions of dollars that, rumors say, lie in Niyazov's bank accounts in Germany, and speculated over whether it was appropriate to look for similarities between the change of leader in Turkmenistan and the processes that unfolded in the Soviet Union after the death of Stalin. These questions, no matter how interesting they might be for the general public, in reality do not have much significance. Much more important is the fact that the events in Ashgabat demonstrated the strategic importance of Turkmenistan for developments in the Caspian Basin and Central Asia. This strategic importance is defined by two major factors.

The first one is the future *export channels for Turkmen gas*. Russia is extremely interested in obtaining at least the majority of Turkmen gas exports, if not the entire amount, in order to compensate for expected decreases in its own gas production. Europe, in turn, is trying to avoid further dependence on Russian gas exports, and would be interested in using Central Asian gas, and especially gas from Turkmenistan, to diversify its energy supplies. Therefore, the issue of building a Trans-Caspian gas pipeline has a great chance of being in the center of an EU-Russia rivalry. The prospects of finding a solution will largely depend on Ashgabat's standpoint, which, in turn, will be closely tied to foreign policy choices made by the new government. At the same time, if Ashgabat supports the Trans-Caspian pipeline initiative, there will be a real possibility that another pipeline across the Caspian will be built, but this time carrying oil and linking Kazakhstan's offshore platforms in the Kashagan region to oil terminals near Baku.

The second factor leading to the growth of Turkmenistan's importance in Eurasia is the dynamics of its domestic politics. A number of experts suggest that the December 2006 passing of the Turkmen leader and the anticipated change of leadership in Kazakhstan and Uzbekistan will create a power vacuum in these states—a vacuum that will automatically or almost automatically lead to clashes between the competing elite factions and potentially spur a nationwide political or even military crisis. Domestic political processes in Turkmenistan may confirm or invalidate such scenarios, even though in both cases it will be necessary to consider the specific nature of the situation in the country.

After the natural (or criminal) death of Niyazov, power in the country fell into the hands of the National Security Council or, more precisely, in the hands of a "junta" composed of several council members, including the heads of the army, security services, and police, as well as their protégé—newly elected Turkmen president Gurbanguly Berdimukhammedov. It is difficult to chase away the impression that all these people were prepared for Niyazov's death, so quickly and with so much coordination and determination did they act, taking just several hours to imprison the chairman of the National Security Council (*Halk Maslahaty*), who, following the president's death, had the constitutional right to assume power and gain full control over the country. It is even more difficult to dismiss the idea that the new presidential candidate was chosen by the leaders of the national security agencies precisely because he does not have either his own power base or, most likely, a political base, and therefore cannot represent an existing or potential threat to any single member of the junta. At the same time, his election eliminates the possibility for any one of them to be promoted to the top position of power. This arrangement allows the existing political elite to preserve the balance of power in top political

echelons and thereby to avoid a power struggle, at least for the first few months after Niyazov's death. If this model is correct, the future of Turkmenistan will largely depend on whether the junta members succeed in building their mutual relations in such a way as to avoid a cutthroat rivalry over control of the "crown jewels" of the country's economy (its most lucrative branches in the official, shadow, and criminal economy), and whether they manage not to provoke a deep crisis in the country.

It is also important to note another issue: Turkmenistan's long-term stability depends on whether the new government succeeds in incorporating the leaders of several dozen different regional and institutional clans and cliques into the national power structure. These clans for the most part have tribal origins and possess *de facto* control over individual regions, provinces, sectors of the economy, criminal networks (especially drug trafficking and transit through Turkmenistan), or specific sectors of the bureaucratic system, such as the security services and the army. The late ruler of Turkmenistan succeeded in significantly undermining the power of such factions. Their top elements emerged in Soviet times, but have either been subject to political repression, were forced to leave the country, or had to lay low and abandon their claims to power and influence, or at least their open manifestation. The majority of top political offices during the Turkmenbashi era were controlled by natives of the Akhaltekin clan, promoted by Niyazov who was an Akhalketin himself, even if these new political leaders were not related to the previous political elites. Possibly the only exception to this rule was Akmurad Rejepov, an extremely powerful Chief of the Presidential Guard and Niyazov's confidant, who belonged to the Ersari tribe (but who has since resigned, leaving the government in May 2007). In other words, the potential opponents of the current ruling junta have found themselves quite weakened. Yet the clan structure of Turkmen society and Turkmenistan's elite has been preserved, and that inevitably leads to the emergence of a new generation of clan leaders who sooner or later (most likely sooner rather than later) may enter the race for power. These realities put the new Turkmen leadership face to face with the following question: should the government continue the policy of trying to suppress clan elites, or should it instead develop a new form of relations with the clans, inviting their members to participate in checks and balances?

iSi Harald **Mueller (Germany)**, Director of the Peace Research Institute – by email from **Frankfurt am Main**: *The incipient quarrel between Russia, NATO, and the United States over the missile issue and Kosovo signals a deterioration. In addition to what I mentioned, the deterioration in the situation in Iraq (despite the much heralded U.S. effort to pacify Baghdad) and Afghanistan bodes badly for world security. The Iran situation is equally worrisome. In Europe, the formation of a united government in Northern Ireland and the improvement in the German economy (projecting better growth for all of Europe) positively influenced* iSi*: rising welfare equals rising security. The* iSi *might remain equal or improve slightly because of efforts to mend fences between NATO/U.S. and Russia.*

Thus, the stability in Turkmenistan and other Central Asian states during a transfer of power depends on whether the ruling elites succeed in avoiding sharp clashes of interests between various factions, clans, and cliques—clashes that go beyond some accepted limits (though the criteria differ for each individual case). In the meantime, there has been fresh evidence that the newly-elected Turkmen president is distributing political offices to some of the well-known political figures who were in disgrace during the last years of Niyazov's rule. In particular, Tachberdy Tagiyev, a former minister of the oil and gas industry who was forced to resign in 2003, was recently appointed deputy prime minister in the new Turkmen government. It is possible that by inviting such personalities into the official government, Berdimukhammedov is trying to establish his own political base and limit the influence of Turkmenistan's prominent figures over his policies. The potential outcome of this policy course is quite controversial. On the one hand, the boundaries between the real or potential opposition and the ruling elite become eroded. On the other, however, the top circles of power are expanding to incorporate individuals and groups that aspire to obtain specific economic or bureaucratic resources.

Given this state of affairs, it is difficult to expect any noteworthy changes in Turkmenistan's foreign policy in the coming months. The interests of the country's leaders will be focused on domestic problems, in particular the distribution of the former leader's legacy and the establishment of a new balance of power among the various factions and clans. The ruling junta is unlikely to welcome external interference in these issues, and thus will continue creating an impression that it plans to continue the previous political course and maintain all of its gas exports commitments.

THE KOREAN PENINSULA: CALM AFTER THE STORM

The missile and nuclear tests that the Democratic People's Republic of Korea (DPRK) conducted in summer and fall 2006 presented the international community with yet another serious challenge. The numerous predictions and analyses that appeared after the tests forecast the aggravation of the political and military situation in the northern Pacific. A particular emphasis was on how well the United States would be able to reestablish Japan and South Korea's confidence in the reliability of American extended deterrence and security guarantees in order to prevent these states from creating their own nuclear weapons in response to the North Korean nuclear ambitions. There have been discussions of increasing assistance to Japan (and potentially also to South Korea) in creating effective anti-ballistic missile systems capable of neutralizing North Korea's ballistic missiles. The United States intensified its political and diplomatic relations with China. The Chinese government has been extremely alarmed by Pyongyang's actions, with part of its exasperation caused by the possibility that the DPRK could have a "nuclear domino" effect on the region. For Beijing, such a development would be extremely undesirable. The United Nations and other international organizations continued to exert pressure on North Korea in order to isolate Pyongyang politically and diplomatically and prevent it from transferring its nuclear materials and technologies to extremist groups and regimes. Economic sanctions against North Korea remained in place, including the freeze on bank accounts in Macau's Banco Delta Asia, until after the time period covered in this review.

These developments should have been expected. Yet as recently as mid-winter 2006-07 it was still hard to imagine the possibility of a rapid mitigation of the situation around North Korea and its nuclear program. Nonetheless, on February 13, 2007, during the so-called *third session of the fifth round of the six-party talks,* the participant states reached an agreement on "initial actions for the implementation of the Joint Statement" of September 19, 2005.

It was agreed that during the first phase of implementation of the Joint Statement, which was to last 60 days, the DPRK would shut down and seal "for the purpose of eventual abandonment" the Yongbyon nuclear facility, including the reprocessing facility, and invite back IAEA personnel to conduct all necessary monitoring and verification "as agreed between IAEA and the DPRK." In addition, during this phase the DPRK would discuss with other parties a list of all of its nuclear programs as described in the Joint Statement, including "plutonium extracted from used fuel rods, that would be abandoned pursuant to the Joint Statement." At the same time, the DPRK and the United States must start bilateral talks aimed at resolving pending bilateral issues and moving toward full diplomatic relations. Similar talks must be initiated between the DPRK and Japan with the aim of taking steps to normalize their relations in accordance with the Pyongyang Declaration, "on the basis of the settlement of unfortunate past and outstanding issues of concern." In its turn, the United States will begin the process of removing the designation of the DPRK as a state-sponsor of terrorism and advance the process of terminating the application of the Trading with the Enemy Act with respect to the DPRK. The parties agreed to the provision of emergency energy assistance to the DPRK for the first 60 days, with the initial shipment of emergency energy assistance equivalent to 50,000 tons of heavy fuel oil (HFO). The parties also agreed on the establishment of five working groups in order to carry out these initial actions and for the purpose of full implementation of the Joint Statement.

During the next phase of implementation of the Joint Statement, the DPRK would provide "a complete declaration of all nuclear programs" and "disable all existing nuclear facilities," including graphite-moderated reactors and a reprocessing plant. The DPRK will receive eco-

William **Potter (United States)**, Director of the Center for Nonproliferation Studies, Monterey Institute of International Studies - by email from **Monterey**: *The news on significant Iranian advancement in uranium enrichment significantly destabilizes regional as well as international security. The proceeding aggravation in Iraq also impacts negatively. It was beneficial for the U.S. secretary of state to interact, if only briefly, with her counterparts from Syria and Iran. The better than anticipated outcome of the NPT Preparatory Committee meeting also was a positive development. There also seems to be a continuing relaxation of tensions in Northeast Asia despite delays in implementing the 6 Party agreement with the DPRK. I anticipate that the* iSi *index will continue to rise as the U.S./Western line hardens toward Iran in response to news of progress it has made in operation of its centrifuge program.*

nomic, energy, and humanitarian assistance up to the equivalent of 1 million tons of HFO.

At first glance, this agreement seems like a clear success for the North Korean regime. Not only did Pyongyang obtain the economic assistance that it so desperately longed for, but it also succeeded in attaining U.S. consent to pursue official direct negotiations, which constituted one of the key political goals of the North Korean leadership. Moreover, there are talks about potential negotiations on establishing diplomatic relations with North Korea. And the only thing that the DPRK has to do to attain such treatment is to close down its nuclear reactors in Yongbyon (whether all of the reactors or just some of them remains unclear) and put them under IAEA safeguards. Yet there is no guarantee that North Korea will not *unfreeze* its reactors in the future and cut off access to IAEA inspectors, as it already did in the early days of the current nuclear crisis on the Korean Peninsula. One of the most crucial issues—how many nuclear warheads and explosive devices remain in the DPRK's possession and how and when they will be destroyed—has not been addressed. Moreover, the United States stepped away (temporarily, perhaps) from the fair demand for the complete, verifiable, and irreversible denuclearization of the DPRK. In addition, Pyongyang obtained an opportunity to continue perfecting its nuclear explosive devices. This point is extremely important, as the low yield of the North Korean nuclear explosion carried out in the fall of 2006 was most likely due to the unsatisfactory functioning of complex electronic and other systems. Furthermore, according to expert estimates, North Korea has enough plutonium to build five or six nuclear weapons, and possibly even more.

Nonetheless, there are certain advantages to the current soft U.S. policy towards the DPRK nuclear program. Washington gained an opportunity to concentrate its efforts, as well as its political and military resources, on the Middle East. The United States demonstrated to the world its flexibility and willingness to compromise, which refutes the common opinion of the current U.S. administration as being *unintelligent* conservatives ready to use force with or without a reason and incapable of cunning political play. Finally, having eased the tensions in the Far East, Washington made a very important step towards China, which is very concerned by the possibility of events in its neighborhood spiralling out of control and complicating the modernization of China's economy and the military—the two issues that are of crucial importance for Beijing.

THE RUSSIAN FACTOR

Putin's Munich speech was widely perceived as a modern equivalent of the well-known Churchill discourse in Fulton that triggered the Cold War. Time will tell whether or not the performance of the Russian leader initiates a new round of confrontation. In any event, his speech has already launched a massive anti-Western campaign instigated by both the military authorities and the Russian Ministry of Foreign Affairs.

A number of top Russian military officials called for Russia's withdrawal from the INF Treaty. This is not the first time that this idea has been put forward, but previously its promoters tend-

ed to be retired generals who no longer had any formal links to the military establishment. Today, by contrast, the call is almost the official platform of Russia's Ministry of Defense. The key argument in favor of leaving the treaty is the perceived threat to Russia's strategic forces of the future U.S. missile defense system being deployed in Europe. This argument raises strong doubts: the antiballistic missile system that the United States is planning to install in Poland is simply incapable of striking intercontinental ballistic missiles (ICBMs) launched from Russia. In order to succeed, they need to possess truly extraordinary performance characteristics that are unachievable in the foreseeable future, starting with speed. The time factor too should not be ignored. The launch of an antiballistic missile can only take place after the detection of a Russian ICBM's launch, and only if the potential margin of error has been eliminated. In addition, it is essential to determine, even in the most general form, the flight trajectory of the missile. Only then can the decision to launch an antiballistic missile be made. All these steps require time, even if it is just a matter of several minutes. These short minutes may make the ICBMs simply unattainable. Finally, it is unclear how in fact ten antiballistic missiles can pose a threat to Russian strategic forces that possess several hundred ground-based intercontinental missiles, especially since the launch sites of many of them are more than a thousand miles away from Poland.

It is certain that Russia's withdrawal from the INF Treaty would solidify NATO and lead to the deployment of U.S. intermediate-range ballistic missiles in Europe. In other words, the world will see a repeat of the missile crisis of the 1970s-1980s. Not only would such a development severely aggravate the political and military situation in Europe, but it would also dramatically damage Russian security. It is important to recall that if the Soviet government had agreed to the "zero" option on INF during the second half of the 1980s, it was not out of ambitions for nuclear disarmament. At the time, the Soviet General Staff had no doubts that U.S. Pershing and cruise missiles deployed in Germany, the Netherlands, and the United Kingdom could deliver several hundred precision nuclear warheads to the major centers of political and military control of the Soviet Union in just 10-15 minutes. For comparison, today such missiles (or their more advanced analogues) can be placed much closer to Russia's borders.

It is possible that having realized the danger of withdrawing from the INF Treaty, Russia responded to the prospects of U.S. deployment of missile defense systems in Poland and the Czech Republic by declaring a "moratorium" on observing the Treaty on Conventional Armed Forces in Europe (CFE). Most likely, this will not spur a harsh reaction from the Western powers, as in many respects, the CFE Treaty in its original form is desperately outdated. At the same time, the moratorium on observing the CFE Treaty cannot possibly obstruct the deployment of missile defense systems in Central Europe. In addition, Moscow's decision once again raises the question: what exactly is Russia trying to achieve in the global arena?

The stance adopted by Russia's military command is understandable. It is in the nature of military defense planners (and not just in Russia) to make decisions based on the perceived capacities of the real or potential opponents rather than their intentions. At the same time, the Russian military has to take into consideration the relentless deterioration of its conventional armed forces. As a result, higher stakes are being placed on nuclear weapons. Finally, the military believes that the more nuclear missiles, submarines, etc. Russia has, the more solid the country's security. This last statement, however, is fundamentally wrong. The Soviet Union lost the Cold War despite the vast stockpiles of nuclear and conventional weapons it possessed.

The view of the Ministry of Foreign Affairs is less clear, even though the ministry closely identifies with the stance of military command. Diplomacy is meant to reveal the intentions of partners, competitors, and opponents, and take them into consideration, bearing in mind a wide range of factors and trying to undertake a deep analysis of international realities instead of assuming the most dangerous alternative (since in the current case, this alternative would be quite unrealistic).

It is true that to achieve this goal, considerable intellectual capabilities are necessary. In the meantime, the MFA-published Survey of Russian Federation Foreign Policy leaves a negative impression. For instance, it notes: "*The chief achievement of recent years is the newly acquired foreign policy independence of Russia.*"[6] Involuntarily, the question arises: has Russia's fierce opposition to NATO's expansion to the East for most of the past decade been

imposed by factors lying beyond its borders, for example, Washington? It is equally interesting to read the following passage: *"The internal strengthening of Russia makes our foreign policy more purposeful and productive...."*[7] This statement arouses a natural desire to ask what is meant here. Does this passage allude to the fact that manipulations of gas prices repelled Russia's only ally, Belorussian president Lukashenko, who frantically started mending relations with the West beginning in early 2007? Does the Russian Ministry of Foreign Affairs really believe that if cities in southern Russia come into the range of Iranian nuclear missiles, this would be in Russia's national interest? If not, why is Russian diplomacy persistently aimed at blocking UN sanctions against Iran that could effectively encourage Tehran to halt its nuclear program, whereas the diplomats' exemplary determination is worthy of a better cause?

Perhaps the most interesting theoretical achievement of the Russian MFA is the repetition of an old thesis dating from the Gorbachev era, which makes a reference to a "stable, just, and democratic world order" that could be achieved through active participation in the work of the United Nations. The authors of the Survey are probably unaware that the very notion of "justice" is extremely subjective, and reflects the interests of specific individuals or social groups. Yet this is not the most important issue. Much more significant is the fact that democracy is a type of political power where citizens delegate their power to elected officials, decisions are taken by majority vote, and the rights of minorities are protected by law which is followed to the letter. Knowing that, the course towards forming a just and democratic world order means nothing else, in essence, than the creation of a world government where the majority would belong to developing countries and China. Does Russia's MFA realize that the call for establishing a democratic world order is pretty much identical to the concept of limited sovereignty, which is perceived as pure heresy by the majority of Russian political elites?

Some practical recommendations are equally illustrative of the fact. For example, sharing their views on resolving the Iraqi issue—possibly the most severe problem of modern world politics, the Survey's authors write: "*In the work with international partners, advance the Russian approaches to a political settlement of the Iraq problem. [...] demonopolization would give a realistic alternative to the present dead-end situation [...] The ideas of setting up a Contact Group made up of the United Nations Security Council permanent members, all of Iraq's neighbors and a number of key regional powers and of holding in this composition an international conference on Iraq with the participation of leading Iraqi politicians appear to be productive."*[8] The only reasonable observation in this recommendation is probably the one that the situation in Iraq is indeed a deadlock. The suggestion for establishing a Contact Group and holding an international conference on the issue of Iraq resembles a grim Soviet joke: *if we do not gather the harvest, we gather a plenary session*. The Soviet Union saw many such *plenums*, whereas the harvests were not as cheery. Indeed, the entire experience of international politics attests that conferences can only confirm a decision reached during lengthy negotiations. And if no such decision has been achieved, then the conferences, contact groups, and other multilateral diplomatic institutions become nothing other than forums for mutual accusations and squabbles.

Yet the key question is whether the militant rhetoric of Russian diplomats and military officials implies the start of active changes in Russian foreign policy. In this light, a truly significant issue is not so much the possible, even though unlikely, withdrawal of Russia from the INF Treaty, but rather the upcoming vote on the Kosovo issue in the UN Security Council. In the meantime, the Security Council, after admitting the Ahtisaari proposal[9] to examination, wisely decided not to rush and instead to send a delegation to Kosovo and Serbia. The logic of this decision most likely lies in a desire to reach a certain compromise, acceptable both for Belgrade and Pristina, which to put pressure on Serbia and Kosovo would rely first and foremost on economic mechanisms. In return, Russia is facing a tough choice: it can either offer assistance in resolving the Kosovo issue, or try playing upon the conflict between the Serbs and Kosovars. Choosing the latter option could be quite dangerous for Russia, as the Kosovo issue is too important to Europe for Russia to try manipulating it. It would be unwise to ignore the distressing memory of the Soviet Union losing the Cold War and breaking up at a time when it was much more powerful, both economically and militarily, than today's Russia, which is rapidly turning into a petrostate.

BISMARCK WAS RIGHT

Global political developments in the fall and winter of 2006-07 confirmed yet again that Judeo-Christian civilization is facing a number of existential challenges. They include a rising tide of Islamic fundamentalism, a proliferation of weapons of mass destruction, an erosion of identity, the imminent depletion of hydrocarbon energy resources, and potentially many others. The civilized world cannot respond to these challenges as long as it remains disunited and weak. Today, as throughout human history, the attributes of power are not limited to force; the power of example and conviction, the art of appealing to common sense and the skill to reach compromises, is equally critical. Such "soft power" is effective given a civilization with key values that include an individual's identity, rights, and dignity. But those who remain outside of this civilization admit no power other than the power of arms. That is why Prince Otto Eduard Leopold von Bismarck—who believed that it is not by speeches and majority votes that the great questions will be decided, but by blood and iron—was probably right.

Yury Fedorov

A VIEW BY A *RUSSIAN CONSERVATIVE*: A PREMONITION OF GLOBAL CHANGE

In the last survey I wrote about a change of historical eras. But history does not exist without economics and technology. And, in the final analysis, global security is a reflection of the sum of the current state of world policy, economics, and the level of development of modern technologies.

During the past few months, which are the subject of my survey, we have been given a lot of reasons to be convinced of this fact. After all, most of the events in global politics and global security have occurred at the intersection of politics, economics, and technology. It is unfortunate that all of the talk in recent years of a "clash of civilizations," while recognizing a shift in historical eras, fatally fails to remember that economic models and technological platforms are changing as well. And they are what determines the concrete policy measures that states follow.

CATCHING THE TECHNOLOGICAL CHANGES OF AN ERA

Like historical eras, economic models and technological platforms come and go. But they change much more frequently with the advent of new breakthrough technologies, the change of commercial methods and transport corridors, and the movement of centers of production throughout the world. The replacement of economic models is often less noticeable to the average person and less meaningful, but it can lead to the rise and fall of states. It is those states that catch the change of economic eras and incorporate nascent economic processes that become great.

Great Britain caught the change from a sailing fleet to steamships—a seemingly simple technological innovation, but one that consolidated the British Empire's global hegemony, on which "the sun never set," for at least a century. Similarly, the United States realized in time the dead end and obsolescence of heavy industry, and boldly stepped into the post-industrial computer world. And in many respects it won the Cold War thanks to this. Further, it based the concept of ground-based air operations on the new technological platforms and used them for new weapons of destruction, which the Soviet Union, with its armadas of tanks, could not counteract.

Fundamental changes in the area of armaments and military technology can only occur on the basis of new technological solutions and through them into new methods to defend the political and economic interests of states, radically changing the structure and very essence of

these interests every once in awhile. It was on the basis of steam and the fleet of steamships, the result of a technological revolution, that the historical era of industrial colonialism, which the *notable Russian political scientist* Vladimir Ulyanov, also known as Lenin, later called the "era of imperialism," arose.

Russia has almost never managed to catch the change of economic eras. The Russian Empire was late to grasp the steam era and shamefully lost the Crimean War, which it should have won if judging by the correlation of forces and "geopolitical" aspects, as is the current fashion. In the thrill of "detente" and "building socialism," the Soviet Union missed the beginning of the era of energy-saving technologies. And after falling asleep with the price of the oil at $35, it awoke with it at $14 to well-known consequences in the form of a systemic crisis.

A first impression: 2007 does not promise a fundamental realignment of the prevailing international trends, a premise confirmed by the new spark of interest in the subject of energy stability, in which Russia has again involved itself. This is understandable: one of the foundations of the current economic model is energy, based on the technological platform involving gas, which replaced coal some time in the first half of the 1980s, having provoked a drop in the price of oil, the acceleration of integration processes in the European Union, the Norwegian economic miracle, and the destruction of the Soviet Union.

But here is the question: don't many recent events testify to the fact that the time is coming when this technological platform too will recede into the background? And isn't it the expectation that this will occur and, further, the attempt to adjust to the new trends that is the cause of many of the events of the past four months? After all, the main idea of late is not only the sad statement that the economy of industrially developed countries will hardly be able to function without Russian gas. It is also the fact that under the present technological paradigm based on energy—with Russian gas or without it—it will be impossible to maintain acceptable rates of global economic growth.

Thus the past few months have been interesting precisely because, through the shroud of diplomatic initiatives and political maneuvers, as well as newly announced military programs—of which there were a strangely large number in the past few months—signs have begun to appear that indicate that a shift in economic models is coming, along with the appearance of new technological platforms.

NATO AND MISSILE DEFENSE: THE REBIRTH OF ATLANTICISM

One of the main themes of late has been the beginning of practical actions to move NATO infrastructure eastwards. This has overturned numerous forecasts that NATO is about to be transformed into a political alliance and its military infrastructure an auxiliary element. NATO arose as a military alliance and will continue to exist in that form. And in order for the alliance to continue to be a significant global force, in must continually undergo some sort of military *process*. In the second half of the 1990s, this process was the realization of operations outside of traditional areas of responsibility. Today the process that is functionally uniting—although they remain politically disconnected—the NATO states is the stationing of elements of the missile defense system.

However, what did the situation around the stationing of U.S. and NATO missile defense elements in eastern Europe show us about the political sphere? In principle, we did not learn anything new: just that that which our foreign policy liberals stubbornly did not want to take note of became so obvious that they could only shamefully turn away their eyes. The United States indicated long ago that it planned to put missile defense elements in eastern Europe. Its entire line of reasoning was well known, and it is not clear what those in Russia who are now so worked up had been counting on.

That some sort of Russian "spirit of partnership" would make the United States give up its strategic plans? But this spirit has been missing for a long time already; indeed, the U.S.-Russian partnership was actually never so significant and, most importantly, it had far too narrow an economic base to make the United States turn away from a major geopolitical project.

That European capitals would value future relations with Moscow? But the United States is not placing the missile defense elements in Germany, which really understands the importance of relations with Russia, nor will it do so in France, or even in Italy. It will do this on the territory of eastern European allies that are playing what is already an open role as a *Trojan horse,* under the framework of joint organizations. These states are not just agreeing to missile defense elements. They are ready to give their territory for torture and execution rooms. What do we expect from them?

The issue is even deeper: essentially, under the name of a "missile defense system for a European theater defense" one of the largest and geopolitically significant projects of U.S. foreign policy of the past ten, if not 15, years is being realized. The United States is beautifully and convincingly drawing its European allies into a costly enterprise of unclear—to the European alliance partners first and foremost—geopolitical value.

Evgeny **Satanovsky (Russia)**, President of the Institute for Middle East Studies – by phone from **Moscow**: *The permanent aggravating factors are the situations in Iran, Northern Africa, and the states of the Horn of Africa. I also foresee that the Iranian problem may be solved with the use of force, because Tehran has not implemented the demands of the UNSC resolution adopted in March 2007. The prevention of the Islamic presidency in Turkey would seem to be critical factor for international security in the near future. I hope that the army will stand for the secular character of the state, as happened before.*

Through this project the United States is introducing a real military element into the European security system—where some naively thought that they could get by without the sharp eye of Uncle Sam—which will be wholly managed, both politically and technologically, from Washington and Washington alone. They will tell the Europeans that the enemy, to whom they have already, since 1991, become unaccustomed, is "at the gates," and only the United States with its new missile defense technology can defend them. And at the same time they will show them that instead of aimlessly and senselessly "playing" at a "European Defense Identity" they should simply "come home" to NATO, to which they are already accustomed and which is, one must agree, completely effective.

In fact, to some extent a situation is arising that is typologically similar to the deployment of U.S. intermediate-range missiles in Europe in the 1980s, which as though in spite appeared in Europe just when a generation of politicians was coming to power that was in principal prepared to play at geopolitical independence. Of course, the Europeans did not like this; they went to demonstrations that, whatever was said there, were not always inspired in Moscow. However, the European elite understood that the alternative to hosting the missiles—regardless of the real level of the Soviet threat—was the loss of the important centralizing element of the North Atlantic alliance. And our European partners could not allow themselves this then or now. Moreover, the harsher Russia's "countermeasures" and the louder its rhetoric, the more tightly the timid Europeans will hold fast to their big overseas brother.

Most importantly, no one is afraid of a potential confrontation with Russia over missile defense. It is already understood that in the military sphere, Russia's industrial complex is only beginning to recover from a crisis, that in a competition with the United States and Europe it will lose, and that if the stationing of missile defense units in Europe leads to confrontation, this will be a competition between defense industries and military technology. So is it worth being drawn into? Maybe it would be more effective to get some control over the construction of the U.S. missile defense system in Europe and make it more transparent?

If one examines the situation closely, here too we find a case of the union of politics and technology against a background of economics. After all, the U.S. game which, I have to say, it played brilliantly, was first to push the threat of the proliferation of missile technologies to the level of an inevitable threat (this is where the grandiose foreign policy PR victory lay—in completely altering the *image of Russia*), and then to frighten both the Americans and the Europeans with the image of missiles arriving from who knows where. Then, on the basis of

new technology (and the new U.S. missile defense technology is probably going to represent a qualitative technological jump, whatever they write in the Russian military newspaper *Krasnaya Zvezda*), they will create a new mechanism for their presence in European politics.

This plan still lacks a new economic model but it seems that it is already clear what it will be based on: on reducing dependence on Russian energy through the development of energy-saving technology and nuclear power. It is noteworthy that even in Germany, the voices supporting the "peaceful atom" are stronger and stronger. So unless something unpleasant happens, a new system of transatlantic relations will be established that will be every bit as durable as the one that existed during the Cold War.

And from this point of view President Vladimir Putin's speech in Munich, so amicably criticized abroad, actually achieved its goal, if only because it provoked a discussion in European political and academic circles over where Europe is headed, geopolitically, and what the logic of the "captains" of European policy might be.

It is important to understand Moscow's reason for this address, and why the Russian president emphasized that he was speaking in the format of a "free exchange of opinions." The reason for the speech was extremely simple: there is little time left for Europe to either prove its geopolitical independence or confirm the fears that a geopolitically independent Europe did not succeed. If the former, then a dialogue on a wide range of issues, including security, is possible, but if the second, then it is pointless, as it would be far simpler and cheaper to arrange bilateral relations with the United States (either on the basis of deterrence or of a renewed partnership), and simultaneously develop our eastward-looking policy. Europe would become a subsidiary foreign policy area, without any particular strategic missions.

Maybe this speech came too late: it is hard to believe that there is anyone in the West today who would be prepared to take conciliatory steps towards Russia, and ideological inertia can play a significant role at times. Maybe it is time to get used to the idea that NATO and the European Union must be viewed without the illusions of the 1990s and the hopes of the early 21st century, but instead in terms of the forgotten paradigm of the 1970s and 1980s?

I would like to make note of one more important detail: for some reason we are not talking about a NATO missile defense or EU missile defense. We speak of a U.S. missile defense system that will cover European territory. And, even more interestingly, Washington is carrying out negotiations over the stationing of the missile defense system not with Brussels, but with individual states. This is, you must agree, quite suggestive, particularly against the background of the splendid festivities in honor of the 50th anniversary of the Treaty of Rome, from which the history of a United Europe began.

Thus, the story of U.S. missile defense in Europe causes us to think: of course, Europe has become a unified, humane space and basically a unified economy (which is, incidentally, vitally interested in Russia remaining within the framework of the current economic model and technological platform). But what about Europe as a geopolitical center of influence? And if Europe has not become—and I emphasize—a single geopolitical center of global significance, then the Russian concept of a "multipolar world" has a dangerous "hole" in it, and multipolarity will revert to bipolarity, where instead of the Soviet Union, China will figure as one of the two poles. This is a completely different picture and set of problems that Russian foreign policy would have to face.

U.S.-RUSSIAN RELATIONS: BALANCING ON THE EDGE OF A COLD WAR

The proclamation that U.S.-Russian relations are edging towards a crisis and that the arrival of a Democratic administration in the United States will lead to an even more unpleasant state of U.S.-Russian relations already seems to be becoming a platitude. Yet it is both true and not true.

It is not true in the sense that the most important problems that will face a new U.S. president—and it remains unclear that the next president will necessarily represent the Democratic Party—will be domestic, since he or she will inherit a split electorate with serious foreign poli-

cy problems and a growing number of inferiority complexes. And it is unlikely that a new U.S. president will take on the Russian problem *right away*.

It is true, in the sense that the new U.S. president will have to start revising U.S.-Russian relations and what is left of the "U.S.-Russian partnership."

In judging everything that has happened recently in U.S.-Russian relations, we should understand that there is a significant difference between the announcements of some sort of "Freedom House," that exists in order to pressure U.S. competitors, and military planning, which has far more significant consequences. For example, take the principles guiding the stationing of military forces and weapons procurement strategy. So far the United States is balancing on the edge of beginning military planning in expectation of a conflict with Russia, but it has not yet crossed this line.

But facts are facts: a fundamental review of relations with Russia has begun, and the real difference is that to date there is more about rhetoric and image in this "review" than, for instance, the appointment of a significant figure like Robert Gates to be U.S. Secretary of Defense, a patented admirer of our country. However, the actual system of relations based on political constraint, if Washington really does make some cardinal decisions, will be drawn up with more consistency and exactitude.

But we must understand that the U.S. armed force's large-scale military equipment renewal program was practically inevitable for domestic economic reasons: the defense enterprises have been investing large sums in the development of new types of weapons and simply must capitalize on these investments, and this is only possible through industrial production and large-scale purchases of these new weapon types.

Indeed, this process has already begun, as we can see from the transition from "trial" to full-scale purchases of the F-22 *Raptor*, a next-generation fighter plane that is expensive and not particularly necessary from the military point of view. And we should not feed any illusions: the U.S. defense industry has accumulated sufficient capacity to bring the U.S. military machine to a level practically unattainable in the foreseeable future either for Russia or for any other country. And a Democratic President, if history is anything to go by, will be even more inclined to begin military modernization than a Republican, since historically the U.S. Democratic Party is more closely connected to lobbyists for the machining industry, particularly of plants in the military-industrial complex, which, to be honest, were driven off during the era of the Texas oil men.

In the political arena, the worsening of U.S.-Russian relations, which in the past three or four months has gone from the plane of rhetoric to the plane of political actions, has its own logic, which flows from two basic features.

On the one hand, there is the United States' unwillingness to accept a strong Russia with a right to its "sphere of influence." After all, it is not entirely true that the United States does not assume that Russia has its own interests. Already at the end of the 20th century, the United States recognized the inevitability of the appearance of Russian interests that might contradict U.S. interests. What they never recognized was that Russia has a right to its own "sphere of influence," particularly with regard to the states that were formerly part of the Soviet Union, Ukraine especially. Not without reason, the real ideologist of U.S. policy with respect to post-Soviet Russia, Zbigniew Brzezinski, emphasized that were Russia to control Ukraine, it would almost unavoidably become an empire that would inevitably challenge the United States in other regions as well.

On the other hand, bilateral difficulties also flow from the fact that Russia has not proven to the United States to date that it is a good partner. In other words, we have talked a lot about the possibility of some kind of strategic understanding with the United States, but have done nothing practical that would prove to the Americans that it is better to negotiate with Russia than to contain it, to say nothing of confronting it. We have forgotten that the Americans are a practical people, who, as the poet Vladimir Mayakovsky once said, have an "average belief" in theory: dozens of statements that we have a weapon capable of defeating missile defense will not

convince them as much as one successful test, particularly since in the past few years Russia has heavily exaggerated its foreign policy propaganda and virtual projects.

In the final analysis, one must remember that a "sphere of influence" does not appear "by mutual agreement;" spheres of influence are not handed out. A sphere of influence is taken without asking. As a rule, by force; sometimes, by craft; only then do the diplomats get their turn, worrying about how most elegantly to formalize the facts on the ground. So from the beginning, hoping that the United States would give Russia the chance to influence the post-Soviet space, based only on the fact that the country's economic capacity is starting to approach top Soviet levels, was utterly naive.

Where the future of U.S.-Russian relations is concerned, there is no need to go to extremes. One should attempt to preserve the existing coordination mechanisms, as they could be needed after some time has elapsed. Of course, that is if Russia is able to finish traversing the "period of political transition" without considerable political losses. The entire recent history of relations with the West proves the well-known fact that despite all of the talk about a multipolar world, the only partner with whom one can actually discuss anything in the Western world is the United States. Yes, it's a difficult partner, with whom our relations will probably deteriorate over the course of the next few years. But it is with this very partner that real problems can be solved and we can ensure our country a worthy place in the foreign policy arena. And we have to preserve the foundations upon which, later, when the dust has settled (in about five years), new U.S.-Russian relations could be built. Whether we like it or not, arms control is just such a foundation.

Incidentally, if we consider the U.S. missile defense system, then the idea, if we skip the hysterics, of obtaining access and monitoring over U.S. facilities, and perhaps agreeing to the siting of some of them in our territory, does not seem so foolish. Although, of course, the idea of a U.S. military facility on Russian territory initially seems preposterous. But if, instead of fighting the inevitable, we think about how we can get the maximum political and economic benefits, then it makes sense. And in the final analysis, however this proposal of cooperation with the United States looks to Russia and the entire civilized world, the United States has no other goals in the development of a missile defense system in Europe other than the fight for global stability against maniacs with intermediate-range missiles.

Or does it?

CHINA ENTERS THE RACE FOR MILITARY TECHNOLOGY

Strictly speaking, the whole story of the interception of a satellite by a Chinese rocket does not have any direct military significance—in order for such significance to arise, China would have to create a group of several dozen such rockets with a shortened preparatory period. The point is that Beijing's demonstration was meant to show everyone, the United States first and foremost, that it has the ability to overcome a real technological gap in the area of strategic weapons. This gap is one of those factors that has allowed Washington, thus far, to feel relatively comfortable in its relations with the "heavenly kingdom," in spite of numerous, lengthy conversations about the coming U.S.-Chinese conflict.

This does not at all mean that the PRC is ready for a full-scale arms race. The Chinese economy is based on an industrial model that has already disappeared into history. And the technological platforms upon which this economic model is based—in transport, in energy, and in metallurgy, i.e. the main industrial branches—all use old technologies. Chinese attempts to overcome this technological lag behind the United States in the weapons sphere have to date had only limited results, although one cannot but recognize the progress Beijing has made.

We can no longer consider the Chinese army as a collection of numerous, but very low quality, tanks and aircraft that are two generations behind those of developed countries. Beijing's actions indicate its readiness to invest significant resources in high-technology weapons. How far Beijing will succeed in this is a big question that will only be answered over the course of time. However, if our Chinese partners have decided to scare Washington via "virtual reality," then a big disappointment awaits them, and soon. To a virtual arms race initiated by our

Chinese partners, our American partners have an excellent answer: pressuring Beijing through the deep dependence of the Chinese economy on access to the U.S. market, together with the backwardness of its infrastructure. This will continue to be a decisive factor in Chinese geopolitical development, despite all of Beijing's efforts to diversify its economic relationships and forcibly attain a new technological level in the main industrial branches (particularly noticeable in China's efforts in the sphere of nuclear energy). And it is through this very "Achilles heel" that they will beat the United States.

Another problem is that if China and the United States actually begin a technological arms race, Russia may be dragged into serious global troubles "through the back door." After all, it is obvious that Russia's role in its "strategic partnership" with the PRC is to take on the major part of the effort to improve Chinese weapons technology. And it is not certain that the political and economic compensation offered by China for the negative political consequences Russia will incur (and only a child would doubt that there will be such consequences) will be enough to make up for the losses we suffer. Thus, moving further along the path of partnership with our great Eastern neighbor, we should nevertheless periodically ask ourselves: should we put on the brakes?

THE NORTH KOREAN NUCLEAR PROGRAM: CAPITALIZING ON STATUS

As we predicted, after its tough statement about its views, new status, and claims, as usual formulated in a "maximalist" manner, Pyongyang has gradually begun to soften its position, probing the possible depth of concessions it may obtain from the global community.

Cynicism about the situation is not caused by the fact that, in agreeing to Pyongyang's demands for economic compensation in exchange for allegedly shutting down its nuclear program, the mediators are basically agreeing to the principle of nuclear blackmail. And not even by the fact that hardly any of the mediators believe in earnest that the North Korean leadership will allow the true, verified dismantlement of the nuclear program. Instead, it is due to the fact that the universality of the Nuclear Non-Proliferation Treaty (NPT) is being still further destroyed. It turns out that some states (India and Israel) are not allowed to possess nuclear weapons, but can actually have them. But certain others (Iran) are not allowed to and cannot have these weapons under any conditions. While still others have to be paid for giving up their nuclear programs. Moreover, with heavy fuel to date, but just wait and it will be money, especially since the model of squeezing economic concessions out of the global community worked out by Pyongyang is completely effective. An indicator of this is that the very fact that when Pyongyang agreed to the resumption of negotiations it caused badly hidden enthusiasm. And the departure of the North Korean delegation from the negotiations on the paltry grounds of the freezing of accounts in a Macao bank led to badly hidden hysterics.

The unfortunate thing is that in agreeing to end the situation by providing goods, the world community is actually contributing to the preservation of the North Korean regime, rejecting the most minimum requirements for the democratization of society and change of the economic model governing North Korean society. That is, from everything that led to the crisis surrounding North Korea's nuclear program in 1993. No one is talking about this any longer, and I fear that they are not even thinking about it either. It is absolutely senseless to ask who won, and to dispute the viability of the idea of *juche*.

THE MIDDLE EAST: TACTICAL MANEUVERS AGAINST A BACKGROUND OF STRATEGIC WORTHLESSNESS

Despite all of the feverish activity in the Middle East, where in the past four months there have been visits by presidents, secretaries of state, ministers, and mediators, the major issue of Middle Eastern policy—the absence of partners capable of negotiating—has not been resolved. Moreover, recently this problem has been aggravated to the extreme and today it is almost impossible in the entire Middle East to find a political figure, even one who is head of state, who can made general, long-term promises. The only exception, perhaps, is King

Alexander **Saveliev (Russia)**, Head of the Strategic Studies Department, Center for International Security, Institute of World Economics and International Relations (IMEMO) – by phone from **Moscow**: *The future deployment of the elements of an American missile defense system in Eastern Europe most of all has influenced negatively the situation on the European continent. At the same time, where the Iranian issue is concerned I see that a military option will not be chosen. Over all I would describe the international security situation as in a state of only temporary stability: this year we are waiting for some changes, given the future changes in the Russian and U.S. governments.*

Abdullah of Jordan; however, with due respect, Jordan is not a major player in the Middle East peace process. All of the other political actors in the region are either in extremely precarious political positions, depending on the domestic political situation (Ehud Olmert or his Lebanese colleague Fuad Seniora), or their influence is on the decline (Hosni Mubarak or the Saudi royal family). Given this situation, the concentration of the main forces in the region on internal maneuvering is quite natural. These can take a variety of different forms: from the corruption and sex scandals in Israel, to the armed conflict in the Palestinian Authority. As they say, "according to the specific character of the region."

Of course, one is justified in noting that the events in the Palestinian Authority were in many respects provoked by Israeli special services, incited by releasing certain Palestinians with others. This is undoubtedly the way things will be, and the Israeli special services are to be congratulated—despite all of the costs, they adequately protected the interests of their country—for carrying out their operation well, providing some time to the country's political leadership to put its house in order. In the two or three months that Israeli special services gave their politicians, one could actually have done a lot. However, I fear that this period of time—and together with it the life of the Palestinians killed in internecine strife—was spent in vain.

But the situation in the Palestinian Authority and Israel are just one part of the whole picture, although an exceptionally important one. Basically, the Middle East has been seized by a single disease: domestic political instability and growing factionalism. No real strategy or long-term policy can successfully be built in the region. If we look at U.S. actions in recent months, then it is obvious that they are not even trying to do this; in spite of optimistic statements, the U.S. administration has taken on no long-term commitments to its allies in the region. This is evidence of the fact that the United States is not pursuing any long-term positive goals in the Middle East, but mainly looking to solve short-term political problems.

Since the United States understands that until the idea of forming an effective collective security system matures in the region (and this will not occur in the foreseeable future, a fact absolutely clear to all concerned), the only thing one can do is to keep the confrontation under control.

From this point of view Russia, too, should probably worry less about the idea of a "return" to the Middle East. First, let us ask ourselves: to what Middle East is Russia returning? After all, in the 1950s, when the Soviet Union was first interested in this region (by the way, Josef Stalin was always skeptical about the possibility of having serious influence there), the Middle East was seething, recently freed from the domination of the traditional Great Powers, while the oil economy was only just beginning to become a geopolitical factor. But the key is that at that time there were significant actors in the Middle East, who came *in earnest and for a long time*. Now none of this is true, and the most important thing—and here we should recognize the wisdom of the Americans—is that there are no actors with whom to build long-term relationships.

Secondly, another critical question that must be answered is: why should Russia return to the Middle East? For the Soviet Union the answer was predictable, transparent, and understandable. In the mid-1950s the Soviet Union was entering the arena of truly global confrontation with the United States and the West as a whole, and the Middle East as an arena of confrontation was exceptionally attractive. But what will Russia gain from a *return* to this region, where

the main actors are notorious non-state actors with whom one cannot negotiate through visits, political declarations, and intergovernmental agreements? And most importantly, you have to negotiate with them *outside of the Middle East*.

Of course, let's say six or seven years ago one could negotiate with the Saudi royal family about its refusing to support various types of radical Islamic movements in Russia and some CIS countries. Now this is already almost pointless, since the Saudis have lost control of the monster, which they themselves fostered in many respects. And an understanding with them will no longer be of decisive importance, unlike in the recent past.

Thus the most that we can expect in returning to the Middle East is to solve some tactical missions through out relations with Middle Eastern elites. The important thing is to ensure that the balance of the costs of our Middle East policy and the geopolitical "profits" from it are nevertheless in our favor. And here we must be especially careful.

For example, there is an outwardly very beautiful proposal about the creation of a gas OPEC together with several Arab countries and Iran. It goes without saying that Russia, as one of the initiators of this organization, could obtain significant influence over the formation of the world market for natural gas. However, one should not forget that after joining this organization, Russia will lose a considerable amount of independence both in its pricing policy and in questions of its entry into new markets (for example, selling Russian gas on the Israeli market would become problematic), and on a number of other very significant questions. Most importantly, there is absolutely no guarantee that the other founders of the "gas cartel" will not attempt to use gas as a weapon for purely political purposes at times, and that these purposes will correspond to our national interests. To say nothing of the fact that after becoming the leader of a gas OPEC and after beginning to speak on behalf of the organization of gas producers, Russia will have associated itself with countries that can hardly be considered industrially developed. That is, it will have chosen a very peculiar place for itself—*a peer among strangers, a stranger among its peers*—in the new opposition between the industrially developed in the post-industrial world and the pre-industrial resource economies. Thus, the balance between plusses and minuses is quite complex and ambiguous.

THE UNITED STATES ON THE WAY OUT OF IRAQ

Certainly, one cannot ignore the situation in Iraq and the consequences of the execution of Saddam Hussein. To be honest, I do not feel sorry for Saddam Hussein. He himself played for keeps with the Americans, when he could, at a minimum, have ended the conflict in a draw. He himself created the Iraqi leadership, his entourage that betrayed him at the first opportunity. He himself created the situation whereby Iraqi statehood was essentially held together by force. There are situations where one should not play, not bargain for concessions, but stand to the death. Saddam, whatever the heroic colors some Russian politicians paint him with, was not just a dictator but a wretched, unlucky dictator. You can, of course, speak about the inhumanity of capital punishment as such, but if we look at the situation from the point of view of judicial logic, i.e., from the point of view of the correspondence of the sentence to Iraqi laws, then there should be no claims against the Iraqi authorities vis-à-vis the execution of Saddam Hussein.

But there are several oddities that do not leave us in peace. First, I cannot believe that the execution was carried out against the will of the Americans. Do you really believe that a collection of political nonentities, by the name of the "Iraqi government," whose very survival depends on whether U.S. command will provide a pair of tanks to escort their limousines when they drive around the guarded "green zone," will risk contradicting their masters? In the second place, the execution itself seems a bit strange: the hangmen do not just insult Hussein; on top of that they scream a toast to the well-known radical Shi'ite leader Muktada al-Sadr directly into a camera. Who is not, putting it mildly, just a figure cherished by the "Iraqi leadership" (even taking into account his recent conciliatory statements), but is considered to be one of the most dangerous U.S. enemies in the region—the weakly al-Qa'ida in Iraq cannot be compared to him. But the most important thing to consider is: what was the result of the execution of Hussein? Yes, it was completely predictable: Sunni fighters, the remaining Ba'athists, and

even al-Qa'ida members, lacking anything better, proclaimed Saddam a martyr (what an ironic fate for the man, who spent half of his life crushing the Islamic underground in Iraq!), undertook this in a completely logical matter: killing Shi'a, while temporarily reducing their attacks on the Americans and their scattering allies. Since it is the Shi'as who would clearly become the obvious culprits in the loss of the latter-day martyr. Certainly, only history will tell us who, how, and why Saddam Hussein was executed, but even now it is possible with confidence to say that the United States—or in any case, its current leadership—has a scenario for exiting the Iraqi conflict. This scenario is simple, doable, and professionally cynical: cutting Iraq up along ethnic lines. As Gilbert K. Chesterton once wrote, in order to hide a dry leaf, one must plant a dead forest.

This scenario, it must be said, is interesting and, most importantly, completely feasible. The only question is how Washington will manage to succeed in combining three seemingly impossible tasks: the controlled disintegration of Iraq followed by a strategically significant conflict between Shi'as and Sunnis, the retention of at least the appearance of stability in Saudi Arabia and the oil kingdoms of the Persian Gulf, and bringing down the price of oil, which would knock the foundation out from under any anti-American coalition.

THE IRANIAN "CAULDRON"

If we reject all of the talk about a clash of civilizations and the age-old contradictions between the Christian and Muslim worlds, then the problem is that Iran is turning into a military and political hegemon in a strategically important region for the functioning of the global economy—though I would like to emphasize once more that to date it is still using a traditional technological platform to achieve this: energy, i.e. oil and gas. In the final analysis, Iran's ambition to develop its own nuclear program and get access to the critical technology of uranium enrichment reflects an understanding that in the contemporary world a state's status and its options for "bargaining" with world powers is determined by a certain set of technologies.

Indeed, possessing a developed civilian nuclear program, especially if one has the technological capabilities rapidly to transform it into a military one (and Iran probably does have these capabilities), one can more shrewdly and effectively bargain with the Great Powers for the status of regional hegemon.

Only one should not forget that this process had already begun in the early 1970s, when Shah Reza Pahlevi held court in Tehran, a friend of the United States (who also, incidentally, had fairly good relations with Moscow too), and if anyone was thinking about an Islamic revolution, then it was only a few "hawkish" analysts at the CIA. At the time, neither a strengthening Iran nor plans to construct a couple of dozen nuclear power plants caused any worry. Today is different: given the nature of the current political authority in Tehran, the country's transformation into a regional hegemon will take place under the flag of a radical Islamic ideology, which could overturn the oil kingdoms of the Persian Gulf (states that are essentially based on petrodollars alone) and Saudi Arabia. And even secular Arab regimes will become very uncomfortable. Therefore, the idea of containing Iran, among other things, through the use of military force is not simply urgent, but completely reasonable from the point of view of protecting U.S. interests in this critical oil-producing region.

There are two fundamental political questions concerning the Iranian situation that are relevant here. And they are not tied to the Iranian nuclear program, which is a consequence, a by-product, but not the reason for the political processes in the region.

For the first question: several years ago, there was a lot of talk in academic and political circles, as well as in the media, about the fact that Iranian *neoshi'ism* was beginning to lose its radicalism and a moderate mood was getting the upper hand in Iranian society. One should recognize that these ideas were not without some foundation: the entire presidency of Mohammad Khatami was ruled under the banner of the liberalization of the Iranian regime, and there were various "signs" that Western countries, including the United States, might be ready to normalize relations and find some way of coexisting. It turns out that either the evaluations of the "burn-out" of Islamic radicalism in Iran were incorrect, or the appearance of Mahmoud

Ahmadinejad as the president of Iran is just an annoying tactical disturbance that the Iranian elite will correct in one way or another. The course of events in the nearest future will provide the answer to this important question.

As to the second question: the zigzags of U.S. policy with regards to Iran—from flirtation to direct confrontation—clearly do not correspond to the development of the country's nuclear program so much as they do to the degree to which ideology directs Iranian foreign policy. Doesn't this indicate that the U.S. priority in the region is not the nonproliferation of nuclear technologies (which were also being developed under President Khatami, a liberal, and President Ahmadinejad just began to "skim off a little propagandistic cream" from the achievements of Iranian, and apparently not only Iranian, nuclear physicists), but Iran's ability to lay claim to the ideological leadership of the Islamic world? One can assume that the United States is proceeding from the idea that a battle of ideologies will become one of the important factors of global development in the very near future. In other words, the United States is treating Iran so severely because it is predicting that there will soon be a sharp rise of Islamism throughout the world, which will be even more dangerous for the United States than the appearance of the al-Qa'ida phantom. And if this rise is be accompanied by a nuclear program, which could, in the foreseeable future, lead to nuclear weapons, then the situation will indeed be hopeless.

For Russia, the Iranian situation should be a very serious lesson. It is a lesson indicating the need for an integrated approach to relations with other countries. We should dismiss the talk saying that the Bushehr NPP had to be built to spite the United States; in today's world the construction of NPPs (in contrast to any another industrial, energy, or even military facility) means committing to a particular bilateral relationship. In this relationship, the state constructing the NPP is obliged to ensure the acceptability of the purchasing state's international behavior on behalf of the world community. But this type of obligation can only be undertaken if there is a stable political and economic relationship between the partner states, within the framework of which the NPP is just one element, and by no means a decisive one. However, Russia has never had this degree of influence in Tehran, while Tehran's domestic and foreign policy have never been transparent enough for Russia to undertake such significant foreign policy obligations with respect to the medium-term, to say nothing of the long-term, future of the Iranian nuclear program.

The problem in Russian-Iranian relations is precisely the fact that at some point in time completion of the Bushehr NPP became the main element in these relations. And the Iranians' nearly unconcealed goal became obtaining fuel assemblies for the operation of the plant as quickly as possible. At the same time, Russia proved to have very few practical—economic, mostly—measures it could use in order to show the Iranians the inexpediency of aggravating the situation further. There is not one really major Russian-Iranian economic project that can be named at present. In the political sphere, we are also far from a strategic partnership. Under these circumstances, Iran, the European countries, and, of course, our American partners are all very tempted to use relations with Russia and this major, but nevertheless single, project, as a bargaining chip in more complex political combinations.

But on the other hand, the situation around the Iranian nuclear program is clear evidence of the importance of individuals in contemporary history. Here I am not talking about the fact that the U.S. president periodically speaks to God and the president of Iran considers the Holocaust a Zionist fabrication. The point here is different: it is already utterly obvious that the Iranian president and his entourage are consciously going about the aggravation of relations with the West, the most explicit evidence being the seizure of British marines near the mouth of the Shat al-Arab river. Ignoring the question of whose territory the Britons were found on, you come to the question: why did the Iranian leadership undertake this clearly scandalous, but strategically unnecessary, action? Tehran must have understood that the West's reaction would be severe and that this would only bring the beginning of military operations closer. The insignificant propaganda points Iran obtained by letting the Britons go mean little in the situation that is arising.

About military operations: preparations for a military solution are producing a stranger and stranger impression. The almost total transparency of the plans is striking. There are discussions in the media about what will be bombed, how they will bomb, what actions Iran may take

in answer, and what the end points may be. This can be explained by the realization of the inevitability of the clash and the limited number of possible scenarios. Everyone understands that the use of force will be limited—the United States will probably limit itself to air strikes, as it simply does not have the troops for a ground operation. It is clear that the Iranian nuclear program will, of course, be slowed down, but not stopped. The question is to what extent it will be slowed down. A strategic operation generally seems pointless. It is clear that after this the radicalism of the Iranians will only grow, and it will become practically inevitable that they are drawn into the Iraqi conflict. But then the question arises: why are both sides so persistently driving the situation to the verge of military conflict?

I think that in the behavior of both sides one finds a combination of domestic and foreign policy motives, with domestic policy factors primary. For the Iranian leader, a confrontation with the United States, even if Iran is hit by air strikes, will bring the majority of Iranian society, including the young people, to his side. But most importantly, it will make it possible to "sweep away" the rising members of the opposition, who otherwise may use the economic difficulties, which will inevitably arise thanks to the increasing isolation of the country, as an excuse to get rid of the radical president. Thus, President Ahmadinejad is not afraid of a confrontation with the United States; on the contrary, he is doing everything he can to ensure that a clash with the West happens as soon as possible, while he still has significant political strength.

The United States, for its part, expects that a limited military strike against Iran followed by a long-term economic blockade will force opposition groups to act more decisively. On the other hand, is clear that for George Bush a confrontation with Iran is not simply one of the elements in a global effort to deter radical Islam, but also a means to put into practice his own model for the development of the Middle East, which the next U.S. president, whoever he or she may be, will be forced to follow. After all, if the idea of stimulating the replacement of the radical president fails, Iran will unavoidably launch a retaliatory strike against the United States in the most predictable place: Iraq. Despite the inevitable losses that would occur in this case, the Americans and President Bush personally will nevertheless be able to solve several important tasks.

On the one hand, the question of the expediency of retaining U.S. troops in Iraq automatically will be removed, and Bush's whole Middle Eastern strategy will be seen as "correct." At the very least, no Democratic majority will be able to question keeping U.S. troops in the region and funding them. No one wants to be labeled a "traitor," especially in an election year. On the other hand, Iran will find itself in a state of nearly total international political isolation, and even former allies, who previously clenched their teeth and endured even the anti-Semitic tirades of the Iranian president, will be forced to turn away.

As a result, a coalition of Arab countries is arising in the Persian Gulf that will not just help the United States contain Iran. Containing Iran, of course, is complicated, but given the export-dependent nature of the Iranian economy and its deep infrastructure problems, as well as the cleavages within the Iranian elite, it is possible. Furthermore, the U.S. operations to contain the Iranians will not be paid for by U.S. taxpayers, but by the oil-producing countries for which the U.S. military will be the only survival guarantee.

Here we must ask the question straight out: what is Russia doing here?

IF YOU TAKE OUT A KNIFE, USE IT!

Russian-Georgian relations are arguably the most painful and unpleasant part of all of Russian foreign policy. This is not just because Russia keeps losing the information war to Tbilisi at every turn. And it's not because Mikheil Saakashvilli is behaving more and more "unfettered," since he feels the United States is supporting him. The problem is that Russia's Georgia policy is more about tactics, even more about PR actions, but there is almost no strategy.

The other problem with our Georgia policy is that we have forgotten that global politics is based on the simple rule of the street (whatever that street may be: Sretensky in Moscow, Ligovsky in St. Petersburg, or in Brooklyn in New York City): "If you take out a knife, strike!" But if you do not have the desire or the will to use it, then keep your knife in your pocket. In the Georgia sit-

uation, we took out a knife and then reconsidered using it. We are the ones who had to take steps backwards while Georgia's leaders, in rays of glory, received congratulations from Western admirers in the United States and the European Union. This should be a significant lesson for us: each PR action has its beginning and its end. The beginning of our most recent PR action with Georgia was, let's say it straight, impressive, but the ending was a failure. That's why our ambassador to Tbilisi had to come home and urgently go to the Prodexpo exhibition in Moscow to give Georgian wines a medal "for high quality." In other words, we had to admit that the attempt to frighten the Georgian leadership had fallen through. We should go still further and recognize that we basically should not frighten the Georgian leadership.

In the end, the events of the recent three-four months have once again proved this with frightening frankness: Russia must clearly decide what it wants from Georgia. If we wants Georgia to have a relationship with us that we finds acceptable, then we have to understand that both the Georgian leadership and Georgian society have chosen in favor of the United States and NATO, and are only irritated by any reminders of the "historical closeness" between our countries. But their anti-Russian rhetoric is really just a way for them to demonstrate maximum loyalty to their new patrons. And it's not our job to convince them that this choice was correct or not. It is significant, by the way, that even if there is a "pro-Russian party" in Georgia, it basically lives in Moscow. And the reason that attempts at economic pressure do not give the desired result is not just because Georgia is a comparatively small state that the United States and European Union can completely take care of, together with major international philanthropists. The fact is that small difficulties, especially if they concern the poorer members of the public, and not the well-off elite, are nothing in comparison to the colossal dividends that the choice in favor of the West promises. Russia really has almost no tools to put pressure on the Georgian elite, while sanctions essentially fall on the poor segments of the population.

We also must understand that, in principle, there is a way to achieve at least neutral relations with Georgia, but only if Russia "gives up" Southern Ossetia and Abkhazia and returns them to Georgia. The question then is: does this correspond to Russian interests? Maybe it would make more sense to acknowledge the fact that Georgia will, for the foreseeable future, be a state hostile to Russia, while at the same time Russia's status as a country that's a factor in the formation of the international system is confirmed. In other words, we should acknowledge the independence of self-proclaimed states.

Of course, in the short term this sort of step would lead our Western partners to become hysterical. But given the current level of the relations between Russia and the United States and Europe, do we need to fear this so much? There will not be an economic blockade of Russia, though to "cure" our country of the oil and gas "needle" this would not be bad, as fortunately we have a gigantic, though senseless, "stabilization fund." Political relations with the United States and the European Union are at such a low level that lower them still further would be extremely difficult, particularly given the second *Maydan* in the Ukraine and the inevitable repeat of the clash of interests between Russia and the West. But at the end of the day the United States and the European Union are unlikely to have a complete falling out with Moscow, given the maturing conflict in the Persian Gulf and the strategic vagueness on the Korean peninsula. In reality, the risks are not as great as it would appear.

On the other hand, the acknowledgement of the independence of self-proclaimed autonomous states would be a real foreign policy step that could be unexpected for our Western partners, who are used to Moscow just "sending signals" but almost never actually realizing its threats. Maybe then Russia's "final warnings" would be taken more seriously. And Saakashvili's supporters would immediately become far more responsible, since they would become convinced that Moscow's "frightening words" may sometimes be followed by concrete actions.

THE END OF THE ERA OF HYDROCARBONS

The new historical era of resource conflicts could also begin on the basis of old economic models and old technological platforms. Most likely, the first period of the new historical era will be developed with an outside force holding sway. For a while Russia will still be able to con-

tinue relatively comfortably. However, only the initial period will remain unchanged. All of the new global issues and challenges facing the leading world powers will force them to search for new economic models and new technological platforms, and then to adjust their foreign policy priorities to the new technological options (including those in the military sphere) and economic interests.

Gas, and in a broader sense, energy based on hydrocarbons, was one of the foundations of the economic model of the late 20th century. It made it possible for Russia to survive the difficult 1990s and to ensure itself a place on the European gas market, as well as to accumulate the resources to begin the new industrial jump, which for some reason has yet to occur. But it is naive to think that gas will eternally rule as the type of energy powering contemporary technological platforms and that Russia will be able to eternally use the gas factor to resolve foreign policy issues, particularly, to put it mildly, in a not too delicate way, as has been done in recent years.

A way out of the global energy impasse will be found, and the more Russia accentuates its importance and irreplaceability as a source of hydrocarbons, the fewer the chances that it will be able to participate in the formation of the new technological platform that will be the basis of a new economic model. And only by going over to a new economic model will Russia be able to realize those natural geopolitical advantages that will give it the new historical era, which we designated above as the era of resource conflict. This is the only way that Russia will be able to preserve the right to have an active role in global politics.

Of course, the end of hydrocarbons will not be as apocalyptic and sudden as some other Russian writers have described. Oil and gas will not cease to be needed for the functioning of the world economy all at once. No perpetual motion machine will appear. This is not the threat, and it is not even the fact that Russia's bottomless and senseless "stabilization fund" will unexpectedly end. The threat is that Russia will be late replacing its technological platform and economic model, and will be relegated to the periphery of the global economy, which will require a heavy price, including a domestic political price, to get out of, as happened in the 1930s.

By the way, if there are any who do not realize it, today's $56-60 per barrel of oil are even less than $35 dollars in 1984. That is, the year when the final sunset of the Soviet economy began, the geopolitical consequences of which are well known. So the margin of safety enjoyed by this energy superpower is not so very great.

Dmitry Evstafiev

NOTES

[1] The *iSi* Index is calculated according to the following formula:

Comprehensive Security Index = $\sum_i k_{G_i} \times factor + \sum_i k_{R_i} \times region + \sum_i k_{L_i} \times \Delta_j \times locality$

Where

k_{G_i} = coefficient "weight" of global factors;

k_{R_i} = coefficient "weight" of regional factors;

k_{L_i} = coefficient "weight" of local factors;

Δ_j = coefficient indicating the importance of an individual region.

The reader can learn more about the *iSi* methodology on the PIR Center website at: http://isi.pircenter.org.

[2] UN Security Council Resolution 1737 (2006), adopted at the UNSC 5612th session on December 23, 2006, <http://www.iaea.org/NewsCenter/Focus/IaeaIran/unsc_res1737-2006.pdf>, last accessed June 26, 2007.

[3] Ibid.

[4] Ibid.

[5] Guy Dinmore, "US hawk judges 'war on terror' a mistake," *Financial Times*, November 24, 2006, p. 8.

[6] Ibid.

[7] Ibid.

[8] Ibid.

[9] Special Envoy of the Secretary-General of the United Nations for the future status of Kosovo Martti Ahtisaari suggests presenting the province with a number of governance attributes and providing it with limited sovereignty under international military and civilian control. His proposal does not mention either the region's independence or Serbia's claims of sovereignty over this territory. The proposal suggests giving Kosovo the right to independently establish diplomatic relations with other states, develop its own constitution, independent judicial system, etc. The plan also foresees the possibility of Kosovo signing international treaties and even joining international organizations.

Roland Timerbaev

ON THE "THRESHOLD" TEST BAN TREATIES OF 1974-76[1]

In 1974-76, U.S. and Soviet delegations held discussions in Moscow on the conclusion of so-called “threshold” treaties limiting the yield of underground nuclear explosions, conducted either for weapons testing or for peaceful purposes. I was a direct participant in these talks.

Until that time the multilateral 1963 Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space, and Underwater (known as the Limited Test Ban Treaty, or LTBT) had existed—it is in force to this day—a treaty that was also concluded in Moscow. But that agreement did not ban underground nuclear tests of any yield, and such testing continued to be conducted intensively not only by the United States and the Soviet Union, but also the United Kingdom, France, China, and later India and Pakistan as well.

Today, all of these countries, as is well known, observe a nuclear testing moratorium, but the Comprehensive Test Ban Treaty (CTBT), concluded in 1996, has yet to enter into force. It would therefore be useful for readers to know what treaty obligations exist with regards to the conduct of nuclear tests. Along with the 1963 LTBT, which continues to ban testing in three environments, there are two additional agreements limiting underground nuclear tests, concluded in 1974 and 1976, that continue to be legally in force to this day. How these treaties were formulated will be described in this section of the journal.

THE TREATY ON THE LIMITATION OF UNDERGROUND NUCLEAR WEAPONS TESTS

In past years there were high-yield underground nuclear tests that resulted several times in the release of radioactive materials into the atmosphere that crossed national boundaries, violating the 1963 treaty. On quite a few occasions, the United States and the Soviet Union filed serious claims against each other in this regard. According to data cited in the media, between 1969 and 1973 alone the United States detonated seven devices with a yield of over 150 kilotons.[2] During the same period, the Soviet Union, according to official data, undertook 18 nuclear tests with a yield of over 150 kilotons.[3]

However, by the beginning of the 1970s both the United States and the Soviet Union had essentially completed the development of their highest-yield nuclear warheads, including those for intercontinental ballistic missiles and sea-launched ballistic missiles with multiple, independently targetable re-entry vehicles (MIRVed ICBMs and SLBMs), and the need for extremely high-yield tests was greatly reduced. The idea of limiting the yield of underground explosions to below a certain threshold arose. Both parties needed this agreement for general political reasons as well: to strengthen and further develop the temporary détente between them.

U.S. President Nixon visited the Soviet Union in July 1974; both parties decided that a treaty limiting underground nuclear tests to a certain threshold should be worked out before his arrival. The exact threshold had yet to be determined, but was to be agreed during the per-

sonal summit between the countries' two leaders, Richard Nixon and Leonid Brezhnev. The two countries' delegations were charged with agreeing on a treaty text, leaving a place for the exact amount of the threshold.

The Soviet delegation was headed by Deputy Minister of Medium Machine-Building (Minsredmash) Igor Morokhov, a very energetic and dynamic individual, and included another deputy minister from the same agency who was in charge of the nuclear weapons complex—Aleksandr Zakharenkov—as well as General Aleksandr Osin from the Ministry of Defense and myself, representing the Foreign Ministry, as well as many specialists from a variety of organizations, including the head of the State Committee on Hydro- and Meteorology (Goskomgidromet), Yuriy Izrael. In a naive attempt to hide his actual role, Zakharenkov was introduced as a Kurchatov Institute professor, but he was seated next to the head of the delegation and it was clear to all that he held a very influential post. During the sessions, which took place in the Minsredmash building on Staromonetnyy Lane, Zakharenkov was fairly stern and observed the proceedings with some distrust, but in everyday life he was a very nice person; I got to know him and sometimes took walks with him together on Sundays as we lived in the same part of the city.

The U.S. delegation was headed by U.S. Ambassador to Moscow Walter Stoessel, an extraordinarily pleasant and kindly man. Something quickly drew us together, and I began to visit Spaso House, the residence of the U.S. ambassador, quite frequently. Soon afterwards, though after the conclusion of the threshold treaties, he fell seriously ill. He was transferred to become the ambassador to Bonn (West Germany) in order to be nearer to good doctors, but as it turned out, he had an incurable form of leukemia and it was impossible to save him.

The threshold test ban treaty was formulated fairly quickly (in about three weeks). The protocol to the treaty provided for the exchange of certain data on each party's test sites. The entire text was completed and printed on special "treaty" paper, but a place for the "threshold" was left empty, awaiting the decision of the two nations' leaders. Upon arriving in Moscow, Nixon and Brezhnev were fairly quick to agree to the permissible threshold yields and the treaty was then signed at a Kremlin ceremony.

As far as the threshold values are concerned, the relevant agencies (Minsredmash and the Ministry of Defense) pushed to obtain a level of permissible yields that would allow them to undertake tests and fairly powerful explosions. I no longer remember the precise numbers, but they were approximately as follows: one to two explosions with yields of over one megaton, three to four of 500 kilotons, and so on in descending order. But our first sessions with the U.S. delegation already indicated that they were not prepared to discuss concrete numbers, and it was also clear to us that so intricate a framework would require very complex and strict monitoring, to which we were not prepared to agree. Furthermore, it would have been politically difficult to justify to the international community a threshold allowing a one megaton test. Thus, those of us in the delegation decided to put off the question of permissible explosive yield until the meeting of the two powers' leaders.

It seemed to me that the issue would be resolved through an agreement on one threshold value somewhere in the range of a few hundred kilotons—100, 200, or 300—and was not likely to exceed these amounts. As it turned out, the agreement on a single threshold value occurred, as I can see from my diary entry of March 14, 1984, made a decade after the signing of the treaty:

"At a reception at the U.S. Embassy yesterday, March 13, Bill Hyland, Henry Kissinger's former deputy in the National Security Council, described how the agreement on a threshold of 150 kilotons for the 1974 treaty came about.

He said that the U.S. military wanted to establish the threshold at 600 kilotons, but Kissinger sharply objected, believing that this number was too high. It was then decided to propose the level of 200 kilotons to the Russians. This was the number that Kissinger and Gromyko then agreed upon.

But later Kissinger decided that even 200 kilotons was a bit too high. At the meeting between Brezhnev and Nixon, the latter, at the behest of Kissinger, proposed the 150 kiloton level and insisted on this threshold.

Then Brezhnev, Kosygin, and Podgornyy went to another room in the Great Kremlin Palace to discuss Nixon's proposal among themselves. When they returned, Brezhnev agreed to 150 kilotons, but Gromyko, who was also present, continued to insist on 200 kilotons, noting that the Americans had already agreed to

it. Kosygin broke into the conversation and told the Foreign Minister: Sit down and listen. This last detail was told to me by the Soviet interpreter present during the negotiations at the Kremlin."

Since I was not personally present during the final agreement on the threshold value between the two countries' leaders, I cannot guarantee the accuracy of the information Bill Hyland told me, but judging by other information I have received, it seems likely to be fairly reliable.

In order to ensure confidence in the observation of the provisions of the Treaty between the Soviet Union and the United States on the Limitation of Underground Nuclear Weapons Tests, signed on July 3, 1974, the agreement provided for each party's use of national technical means for monitoring, in accordance with universally recognized principles of international law. Furthermore, both parties were obligated not to interfere with the other party's national technical means for monitoring the agreement.

The agreement also provided for consultations between the parties if questions or doubts about the other party's actions were to arise in the process of observing each other's adherence to the treaty. In order to assist in the realization of the aims and provisions of the treaty the parties could, if needed, consult with one another, make requests for information, and provide information in connection with these requests.

There was also a protocol to the treaty, as mentioned above, which was an integral part of the agreement. The protocol governed issues related to the mutual exchange of information about both parties' test sites and nuclear tests that were conducted. Although the 1974 agreement did not ban all underground nuclear weapons tests, instead establishing a simple threshold for particularly powerful blasts, it naturally required no less confidence in the fact that the parties were abiding strictly by their obligations. Each of the parties had to be convinced that the other party was not exceeding the agreed yield threshold and, of course, this was critically important to national security.

In the protocol, the parties committed to exchanging data on test sites on a reciprocal basis, in order to provide for monitoring of the fulfillment of treaty obligations. These tests sites are like field laboratories, equipped with special instruments and complex equipment used to measure the size of explosive indicators and check the correspondence of design parameters to the actual data obtained as a result of the testing of one type of nuclear device or another.

The main way to detect underground explosions and determine their strength is by recording seismic vibrations in the earth's crust with the aid of seismic instruments. However, several factors influence the effectiveness and accuracy of teleseismic devices, first and foremost the type of ground in which the nuclear explosion is taking place. If the explosion occurs in solid rock, granite for example, then it gives one seismic magnitude, while if an explosion of the same strength occurs in sedimentary rock, the indicators will be different. Therefore, in order to ensure the sufficiently accurate recording of seismic signals, one must know the basic geological and geophysical characteristics of the test sites.

The protocol provided for the mutual exchange of the following data: the geographic coordinates of the boundaries of each test site and the boundaries of the various geophysical test areas within them, information on the geology of these test areas, and information on two explosions for calibration purposes at each geophysically distinct tests area at which underground testing of nuclear weapons had and would continue to occur.

The information on explosions for calibration purposes is important for the tuning of seismic equipment and a more precise determination of explosive force via teleseismic monitoring. Data on the power, date, and time of these explosions, as well as their depth and coordinates, had to be provided. Furthermore, the yield of the calibrating explosions had to be as close to 150 kilotons as possible, and no less than 1/10 of this amount, that is, 15 kilotons. As for test areas for which data on two tests for purposes of calibration were not available, data from one test had to be provided and an exchange of data from a second test provided after the corresponding explosion. The conduct of tests exclusively for purposes of calibration was not required.

The protocol also established that the geographic coordinates of underground nuclear tests had to be provided after the conduct of such tests. The exchange of data on tests sites was to take place together with the exchange of the instruments of treaty ratification, although the

parties agreed on a mutual basis to provide each other the possibility to familiarize themselves with this data before the exchange of instruments of ratification.

I would like to note that it was very nice to see, when observing how the technical details in the protocol were discussed and agreed by the relevant specialists on both sides, how close their understanding was of the various aspects of the problems under consideration. The very fact that the treaty protocol included an agreement on the exchange of information about test sites, which had been secret until that time, was an important event that testified to the favorable trends contributing to a reduction in tensions between the two powers. It is indicative that, as has already been noted, all of the negotiations on the treaty and protocol only took about three weeks.

Although the threshold test ban treaty did not immediately enter into force, the parties had already reached an understanding on observing the agreement not to undertake nuclear explosions with yields exceeding 150 kilotons.

THE TREATY ON UNDERGROUND NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES

However, the question of peaceful nuclear explosions (PNEs) remained. U.S. and Soviet scientific research and experiments had shown that the use of nuclear explosives was significantly more effective than chemical explosives for the realization of many economic projects. The Soviet Union had envisioned the following possible industrial uses of nuclear explosives: intensifying the development of oil and gas fields; the creation of underground caverns for the storage of natural gas, gas condensate, and petroleum products; the creation of underground storage sites for the burial of harmful industrial wastes; underground exploitation of ore deposits; the elimination of accidental gas and oil gushers; the preparation of mineral deposits for open-pit mining; deep geological sounding; the construction of canals, weirs for hydroelectric plants, and water reservoirs, etc.[4] "Operation Plowshare," the U.S. PNE program, got promising results from explosions used to increase gas output and considered explosions for other purposes, such as digging canals (in particular, they examined the desirability of expanding the Panama Canal or digging a parallel canal through Nicaraguan territory), mining, and creating underground storage caverns.

But before the use of nuclear explosions for industrial purposes could be realized in practice, there were many technical, political, and other difficulties that had to be overcome. First and foremost, ways to apply PNEs that eliminated or, at the very least, reduced the release of radioactivity into the environment to tolerable levels had to be developed.

The peaceful use of nuclear energy is closely tied to the problem of nuclear nonproliferation. After all, any nuclear device, whatever its purpose or the perfection of its design, has important features in common. The main feature common to all nuclear devices is that a device of relatively small mass can release an enormous amount of energy in just a few milliseconds. Another distinctive feature of nuclear explosive devices is their relatively small size and weight, which makes it possible to adapt them for military uses with the aid of various means of delivery. Thus, devices designed for peaceful nuclear explosions are not essentially different from devices designed for military use. But the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) does not ban PNEs. To make it possible for non-nuclear weapon states to make use of peaceful nuclear explosions, the NPT includes language stating that states parties will cooperate to ensure that "any potential benefits could be made available to non-nuclear-weapon States... by way of nuclear explosion services provided by nuclear-weapon States... and conducted under the appropriate international observation and international procedures called for in Article V and in accordance with other applicable international obligations." In other words, this meant that the nuclear states could use their nuclear devices to help non-nuclear states to obtain the benefits of PNEs.

Another great difficulty related to the use of PNEs had to do with the issue of banning nuclear weapons tests. Here the problem was in ensuring that PNEs would not be used for purposes related to nuclear weapons.

Both the United States and the Soviet Union had nuclear peaceful use programs with civilian purposes: to dig canals, to create underground facilities for the storage of dangerous materials, for geological probes, etc. The Americans were the leaders in this area: 27 explosions were carried out under the "Operation Plowshare" PNE program from 1960-70, during which time 35 nuclear explosive devices were used. The first PNE was carried out in 1961, and the last one in 1973, though the program continued to be funded until 1977. The most powerful explosion was 105 kilotons.[5] However, the United States, as my good friend Gerald Johnson, the director of the program, once told me, was disillusioned by the PNE program fairly quickly, since underground explosions gave but small economic returns and Americans know how to count money, while such explosions (which, after all, were not carried out at special test sites but in various places around the country) could have dangerous environmental consequences.

In 1974, after the threshold nuclear test ban treaty had been worked out, at the suggestion of the Soviet Union it was agreed that a separate agreement on limiting the yield of PNEs should be elaborated. We insisted upon this as the PNE program was still expanding at that time, and therefore the threshold treaty did not apply to PNEs but stated that they would be regulated by a separate agreement, to be negotiated by the parties and concluded "as soon as possible." In fact, since the Americans had already curtailed their program we were really only negotiating about limits on Soviet explosions. This was justified, since a peaceful nuclear explosion cannot be distinguished from a military explosion, and that means that test explosions to enhance nuclear weapons could be passed off as PNEs. However, it was important for Moscow that it reach an agreement that allowed the Soviet Union to continue its PNE program.

In total, the Soviet Union carried out 124 peaceful nuclear explosions, during the course of which 135 nuclear devices were used. The first Soviet PNE was exploded in 1965, and the last one in 1988. Most of the explosions had small yields, but some reached 80-140 kilotons. Group explosions were also carried out. For instance, in 1971 a group explosion (three nuclear charges of 15 kilotons each) was carried out in Perm region in underground shafts, which resulted in the ejection of soil, as part of an experiment in digging canals.[6]

However, working out a new treaty limiting PNEs proved to be extremely complex. The negotiations in Moscow, which took place in the same building on Staromonetnyy Lane, lasted for one and a half years (from October 1974 through May 1976); moreover, we met quite often. As before, our delegation was headed by Deputy Minister of Medium Machine-Building Igor Morokhov, and he was the ideological inspiration behind the negotiations, but he was often absent due to his duties at the ministry, and during his absence I had to bear this heavy burden. Our delegation also included experts that were very familiar with the conduct of PNEs, including All-Russian Scientific Research Institute of Technical Physics (VNIITF, in Snezhinsk) representative Vadim Simonenko. The U.S. delegation was headed by Walter Stoessel; his deputy was Bob Buckheim.

In the end we both concluded an agreement and agreed on a verification protocol. The parties were obligated not to undertake:

- ❑ Individual peaceful nuclear explosions with a yield of over 150 kilotons;
- ❑ Group explosions with an aggregate yield of over 1.5 megatons; moreover, where the total yield of such an explosion exceeded 150 kilotons, the explosion would be monitored in order to identify each individual explosion and determine that its yield did not exceed 150 kilotons.

The issue of verification was a critical part of the negotiations. So that the opposite party could be convinced that the threshold yield had not been exceeded, the protocol to the treaty contained a very detailed and fairly intrusive system of monitoring and inspections, which the delegations developed with the participation of experts from both states.

The protocol was an integral part of the agreement. It contained an exceptionally elaborate system of various types of measures, methods, and procedures intended to ensure the observance of the agreement. The monitoring system was based on two methods: on the use of national technical monitoring means and on providing the other party access to the sites of large yield PNE explosions. It should be noted that underground peaceful nuclear explosions,

in contrast to nuclear weapons tests, were not carried out at test sites but in quite unexpected locations. This made using teleseismic equipment to get the necessary data more difficult, since there had been no research on the route through which the seismic waves passed during each explosion.

The rights and tasks of the other party's representatives, who were to have been present during PNEs, were very thoroughly described in the protocol. Representatives could be present during any explosion with a planned total yield of over 150 kilotons. In addition, when the parties agreed that it would be useful, the other party's representatives could also be present during explosions in the 100-150 kiloton range. This might be the case when the parties felt that the special features of a project meant that teleseismic measurements could not be ensured with sufficient reliability, and on-site examination would be desirable. At the same time, the protocol stated that the other party's representatives would have no access to the explosive device or any written or other information about its construction, and would not try to obtain it by any means whatsoever. A Joint Consultative Commission was formed in order to help in the implementation of the treaty and protocol.

The treaty was signed on May 28, 1976 by Leonid Brezhnev and the new U.S. president, Gerald Ford, simultaneously in the two capitals—Moscow and Washington—which was unusual at the time in terms of world practice. Richard Nixon had already left office by that time, as a result of the Watergate scandal, and had been replaced by Ford.

One of the positive results of the U.S.-Soviet negotiations on peaceful nuclear explosions was the creation of a detailed, well-developed monitoring system to ensure adherence to the PNE Treaty. This was completely new in the international legal practice of the time.[7]

However, another 15 years were required for both threshold treaties to enter into force.

THE THRESHOLD TREATIES ENTRY INTO FORCE

Even the intrusive monitoring in both threshold treaties and their protocols, and especially in the protocol on PNEs, was not enough for the U.S. Senate to ratify them. The parties continued to adhere to the treaties for about 15 years, although from time to time they sent each other inquiries asserting that the agreed-upon limits had possibly been exceeded. In many cases this could be explained by differences in the geologic structure of the test sites and, therefore, difficulties in taking teleseismic measurements of the magnitude of an explosion from a distance. These inquiries were made quietly and did not lead to any particular claims by either side. I still have a document, prepared in 1985, that gives the number of these inquiries:

Number of inquiries by the Soviet Union and the United States regarding explosions that exceed the threshold level of 150 kilotons

U.S. inquiries sent to the Soviet Union (1976-1985): 13

1976 – 1

1978 – 1

1979 – 3

1980 – 2

1981 – 1

1982 – 2

1983 – 1

1984 – 1

January 29,1985 – 1

Soviet inquiries sent to the United States (1978-1985): 8

1978 – 1

1979 – 1

1982 – 3

1984 – 2

April 25, 1985 – 1

The treaties formally entered into force only after yet more intrusive monitoring protocols had been worked out in the early 1990s. I was not involved in the preparation of these new protocols, as I was on a foreign assignment at the time. Yevgeny Golovko, Igor Palenykh, and Anatoly Belov undertook this work on the part of the Russian Foreign Ministry.

Originally, it was proposed that fulfillment of the threshold treaties would be monitored via the seismic method, to be supplemented by the exchange of information on test sites and their geological characteristics. However, some of the properties of the seismic monitoring method itself left significant uncertainties in the interpretation of data. Thus, the special geological features of the Semipalatinsk Test Site—the hard rock formations in which the nuclear explosions were conducted—resulted in the fact that the seismic signal there was stronger than from equivalent explosions at the Nevada Test Site. This led to suspicions that the established limit for the release of energy could have been exceeded. The criticism of this monitoring system was so strong in the United States that ratification of the treaties in their initial form proved impossible.

While observing the 1974 and 1976 treaties *de facto*, by the early 1990s the Soviet Union and the United States had come to a mutually acceptable solution to the monitoring problem and developed new protocols. This made possible the joint experiments with explosions that were carried out by both parties at the Semipalatinsk and Nevada Test Sites. Viktor Mikhailov, who later became Russian Minister of Atomic Energy (in 1992), led the work on the U.S.-Soviet monitoring experiment for the Soviets.[8]

Under the new verification protocols, the new system of measures to monitor nuclear tests included such procedures as an exchange of information on test sites and on nuclear testing programs, the possibility of access to test sites during their preparation and the receipt of samples of the relevant rock formations, familiarization with the configuration of the placement of the container with the nuclear device as well as the container itself, in addition to monitoring the release of energy through the so-called hydrodynamic method, by measuring the speed of the shock wave during the test near the point of explosion. The latter made it possible to obtain more accurate data on energy release than through the seismic method and, in addition, help calibrate the seismic measurements. All of these activities were carried out with the participation of personnel from the party that was doing the monitoring, who were given access to the test site. An analogous approach was taken with regards to monitoring peaceful nuclear explosions. It should be noted that in working out the protocols to the threshold treaties of 1974 and 1976 it became clear that it was practically impossible to solve the problem of differentiating weapons tests from peaceful activities. In accordance with these treaties, the two activities would be differentiated in accordance with the following formality: any explosion that took place at a test site would be considered a weapons test, and peaceful nuclear explosions would only be allowed outside of the test sites. Of course, this approach did not exclude the possibility of peaceful nuclear explosions concealing weapons tests.[9]

The new verification protocols to the threshold treaties were signed on June 1, 1990, and the treaties entered into force on December 11, 1990. The threshold treaties, together with their verification protocols, brought the Soviet Union and the United States unprecedented levels of mutual openness in the area of nuclear tests. Favorable conditions for further progress in monitoring a ban on any nuclear explosions had been created.

The conclusion, in 1996, of the Comprehensive Test Ban Treaty (CTBT) should essentially have ended the need for the threshold treaties, although, of course, they continue to be in force.

Moreover, the CTBT has still not entered into force, largely due to the negative attitude that the U.S. Congress and the current Bush Administration have taken of it. China, Israel, India, and Pakistan have not adhered to the CTBT either. But the threshold treaties have played a positive role nevertheless, because they were the first to contain such a serious and thorough system for monitoring and inspecting nuclear explosions. Some of their elements were used in the CTBT.

Notes

[1] The author would like to express his deep gratitude to PIR Center Research Council member Victor Slipchenko for his review of this manuscript and his valuable comments on it.

[2] *International Herald Tribune*, November 21, 1975.

[3] *USSR Nuclear Tests: General Characteristics, Goals, and the Organization of USSR Nuclear Tests,* Viktor Mikhailov, ed. (Moscow: IzdAT, 1997), pp. 157-160.

[4] See *Peaceful Nuclear Explosions,* I.D. Morokhov, ed. (Moscow: 1970), pp. 5-6.

[5] *USSR Nuclear Tests,* op. cit, p. 141.

[6] http://en.wikipedia.org/wiki/Operation_Plowshare; *USSR Nuclear Tests,* op. cit, pp. 177-84.

[7] For more details on the threshold PNE treaty see: R. Mikhailov, "Legal Bases for the Regulation of Underground Peaceful Nuclear Explosions," *Sovetskoye gosudarstvo i pravo* (Moscow: 1977), pp. 92-99. For the texts of both threshold treaties in Russian, see: The Soviet Union and the Struggle for Disarmament: A handbook of documents (Moscow: Politizdat, 1977), pp. 137-41 and 159-83.

[8] It should be noted that during the joint experiment on monitoring the yield of nuclear explosions at the Nevada Test Site in 1988, the agreement called for the yield of the underground explosion being monitored not to exceed 150 kilotons (both there and at the Semipalatinsk Test Site); however, the one in the United States proved to be 180 kilotons. This significantly exceeded the agreed requirements, and as a result a collapsed depression was formed. (interview of Viktor Mikhailov in *Vremya novostey*, December 7, 2005). I might add that the Americans were very upset about this and requested that we not speak about the matter publicly; however, the story has since become public knowledge through the media.

[9] Viktor Slipchenko and Oleg Rozhgov, "The Process of Developing Comprehensive Test Ban Treaty Verification Mechanisms," *Yaderny Kontrol*, No. 4, 2001.

IN ANTICIPATION OF NEW APPROACHES

Nuclear Weapons After the Cold War. **Carnegie Moscow Center, Alexei Arbatov and Vladimir Dvorkin, eds. (Moscow: ROSSPEN Russian Political Encyclopedia, 2006).**

Reviewed by Vladimir Orlov

Arguments about Iran's nuclear intentions... Six-party talks on the DPRK nuclear program... The U.S.-Indian agreement on nuclear cooperation... The modernization of China's nuclear weapons... Attempts by terrorist organizations to obtain components of weapons of mass destruction (WMD)...

These are today's realities, and they guarantee that "nuclear" news will continue to make headlines in leading newspapers and lead on prime time television broadcasts. However, the constant presence of the "nuclear factor" in the media, which has meant that discussions of this issue—particularly since the search for WMD was chosen as the pretext for the Iraqi military campaign of 2003—have moved from the traditionally narrow sphere of the expert community to a far broader audience, creates a risk that we will lose sight of the big picture and general trends in favor of immediacy.

That is why it is so important that a *comprehensive* analysis of the "nuclear problem" be undertaken right now, in the new, post-bipolar situation. Of course, this analysis must not be abstract or disengaged from current international politics. Nevertheless, it should not be distracted by happenstance and should be consistent, both on questions of the development of nuclear weapons programs and where nuclear nonproliferation issues are concerned.

The authors assembled under the leadership of Alexei Arbatov and Vladimir Dvorkin rise to the ambitious, wide-ranging task they set themselves with brilliance. First, the editors of *Nuclear Weapons After the Cold War* gathered together a group of star authors to work on the monograph. Many of their names have become synonymous in Russian political science with the topics upon which they have written chapters in this book: Elina Kirichenko and export controls, Roland Timerbaev and the International Atomic Energy Agency (IAEA), Alexander Kalyadin and counterproliferation policy, Vitaly Naumkin and the Middle East, Gennady Evstafiev and Iran, Vasily Mikheev and the Korean Peninsula, Anatoli Diakov and questions about fissile material production, Ekaterina Stepanova and international terrorism... and the list goes on. Readers will easily see for themselves that the editors were able to form a first-rate collection of authors and provide an encompassing picture of the opinions about current (and, to some degree, future) nuclear weapons.

The book is aimed not at newcomers to questions of nonproliferation and nuclear deterrence, but at the well-established expert audience. In this it differs considerably from the other works on nuclear nonproliferation published in Russia to date.

The authors and editors try not to make do with easy answers and not simply to churn out "overviews" on one problem or another or on one region of the world or another, although from the point of view of issue areas and geography the book covers practically all of the "sore points" and includes the broadest—and for the most part accurate and trustworthy—set of factual material that all by itself would make it an irreplaceable reference text for Russia's

community of experts—alongside such unsurpassed tomes as *Deadly Arsenals*, under the editorship of Joseph Cirincione, which has already been issued in two editions by the Carnegie Endowment for International Peace in Washington.[i]

The greatest virtue of this monograph is that it *poses questions* and attempts to *propose solutions*.

From my point of view, the key to understanding the "ideology" of the entire monograph is its chapter four (authored by Alexei Arbatov), "The Problems of the Treaty [on the Nonproliferation of Nuclear Weapons, NPT] and the Nonproliferation Regime," particularly a section entitled "The Dialectics of the 'Peaceful' and 'Military' Atom." At the basis of the NPT, writes the author, there is silence regarding "the premise that the creation of nuclear weapons can be a derivative, or by-product, of the development of peaceful nuclear energy and science. In accordance with this premise, maximum control should be exercised by 'legitimate' nuclear powers and international organizations over supplies of nuclear materials and technologies in order to prevent their military use by recipient states. But in reality, with a few exceptions, this can occur. Brazil and Argentina were moving forward in this sphere without a clear understanding of their final aims; all other countries clearly realized and continue to realize that the use to which they intend to put nuclear energy – military or peaceful – is needed in the final analysis." (p. 143)

The author develops this thesis further, asserting that states like the Netherlands, Switzerland, Taiwan, and Australia did not build nuclear weapons, despite their very high level of scientific, technical, and industrial development in this field and their significant freedom to make use of nuclear materials, not so much because of their membership in the NPT as due to "their confidence in security assurances, which do not depend on treaty norms, or fear of severe international consequences had they created nuclear weapons, which also was not strongly related to the NPT." (p. 143) States that developed a military component did so, in the opinion of Arbatov, "purposefully, and not 'alongside' a peaceful nuclear program. Their motives were not to obtain economic benefits on the side but tasks of an entirely different order, and therefore the promise of economic benefits as a reward for foregoing nuclear weapons, the foundation of the NPT, exerted only weak influence on their policy." (p. 144)

I believe that this key element in the book will give rise to numerous debates; but I am sympathetic to it.

Another indicative proposition in this book, no doubt, is the assertion that the priorities of the P-5, the "nuclear powers," differ *substantially*, a fact that, at the very least, "hampers the elaboration of a common policy... on strengthening the NPT and its arrangements..." (p. 153) Moreover, the "tacking" in the policies of the P-5 towards states that are a threat to nonproliferation create great freedom of action for the latter, while antagonizing "law-abiding" nonnuclear NPT member states and undermining their desire actively to cooperate with the leading powers..." (p. 153) The authors provide numerous examples that convincingly illustrate this thesis. Furthermore, they clearly demonstrate that the nuclear policies of most of the (NPT-recognized) nuclear weapon states are moving in completely the opposite direction from the one prescribed in the Treaty and subsequent NPT Review Conference documents; as a result, the tie between Article VI and the other NPT articles has become hopelessly disconnected through the actions of the weapons states themselves, discrediting the effectiveness of the whole nonproliferation regime.

Speaking of current Russian and U.S. nuclear policy, the authors examine the preservation of the "archaic and absurd system of strategic relations" and outline, albeit with a dotted line, the course of a transition to a new strategic relationship, which they call "nuclear partnership." The authors insist that the time has come to form a "qualitatively new policy both in the sphere of nuclear nonproliferation and in the area of nuclear deterrence." However, the authors admit that this transition can only occur if there is a significant effort made together with a system of well-thought-out and consistent measures and agreements between the leading states, which requires the political will of their leaders; otherwise, the work's recommendations may turn out to be nothing more than a list of good wishes and general declarations.

At one point, summing up their trips to nonproliferation's "sore spots," the authors cannot keep from Cassandra-like warnings (of global scale): "The next state of proliferation, if it gains

momentum, will not simply lead to an exponential growth in the threat of the use of nuclear weapons, but due to the confluence of numerous risk factors could make the use of nuclear weapons practically unavoidable in the foreseeable future." (p. 155)

At the same time, the authors are much more cautious in their discussion of the threat of unsanctioned access to nuclear weapons and nuclear materials, and the problem of nuclear terrorism in general. The chapter by Ekaterina Stepanova and Alexander Pikaev—one of the best in the monograph, in which the authors confidently develop their arguments ("Nuclear terrorism is highly unlikely... but several current trends indicate that this situation could change") on the basis of extensive factual material and do not allow themselves to make the common mistake, whereby issues of WMD terrorism are not examined in the context of the problem of contemporary terrorism as a whole and instead become an object of unscientific political speculation.

The book's authors are less prepared for the debate in its pages on the changing configuration of the official nuclear club, primarily because India, which apparently found the doors to this "closed club" slammed shut in front of it long ago, is now calmly sitting at the table, nearly as an honored guest; whether this pleases people or not, the reality is that the nuclear club has already expanded from five members to at least six – this is a fact of life that cannot be ignored.

There will surely be arguments about the final section of the book, where it attempts to answer the question *what is to be done* under the current circumstances, on the basis of the rather disquieting diagnosis in the book.

In part (for instance, on the question of denying states that leave the NPT the fruits of their Treaty membership), we have a compressed reproduction or citation of the Carnegie Endowment for International Peace's 2005 book *Universal Compliance: A Strategy for Nuclear Security,*[2] which has received a great wave of responses in the press and a very mixed, to a large degree restrained or skeptical, reaction from the international expert community.

In part, the Russian authors and editors draw utterly independent, clear, and harsh conclusions. "Arbatov and Dvorkin's ten points" on the need for a new policy in the sphere of nuclear nonproliferation and nuclear deterrence, if it does not shake the world of nonproliferation and disarmament experts, should at the very least draw a great deal of attention to itself; and there is no doubt that these "ten points" will be the starting point for new academic and, it is hoped, practical discussions.

Notes

[1] Joseph Cirincione, Jon Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats*, Second Edition, Revised and Expanded (Washington: Carnegie Endowment for International Peace, 2005).

[2] George Perkovich, Jessica Tuchman Mathews, Joseph Cirincione, Rose Gottemoeller, and Jon Wolfsthal, *Universal Compliance: A Strategy for Nuclear Security* (Washington: Carnegie Endowment Report, March 2005).

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THE *BOMB MAKER* WHO DOUBTED

Lev and the Atom. Academician Lev P. Feoktistov: A Self-Portrait and Reminiscences (Moscow: Voskresenye Press, 2003), 440 pp.

Reviewed by Mikhail Novikov

The history of the creation of the book *Lev and the Atom. Academician Lev P. Feoktistov: A Self-Portrait and Reminiscences* is as follows. In 1999, Lev Feoktistov's work *Nukes Are Not Forever* finally saw the light of day. The volume was published in a small print run in Russian and English through the "Disarmament 2000" campaign of the International Physicians for the Prevention of Nuclear War. The author intended to republish the work, but did not have time: his heart stopped in February 2002. His friends and other like-minded individuals had to take up this task themselves. They decided that together with the book written by Feoktistov himself, they would publish under one cover recollections about him by his associates and companions-in-arms, either recorded in their own hand or from their words, as well as a record of the last public appearances where Academician Feoktistov spoke about the problems of nuclear disarmament and international security.

Lev Feoktistov began his work in 1951 in the theoretical division of KB-11 (this is what the Soviet Union's first nuclear center, at Arzamas-16, was called), headed by Yakov Zeldovich. In the early 1950s, Arzamas-16 was thoroughly examining two possible methods to create a hydrogen bomb: thermonuclear detonation in deuterium (the Zeldovich "pipe") and the construction of a sphere with alternating layers of light (deuterium, tritium, and their chemical compounds) and heavy (uranium-238) elements, dubbed a "layer cake" (*sloyka*) by the idea's author, Andrei Sakharov. Work on the "layer cake" progressed more successfully, and after the U.S. test of a hydrogen device in 1952, which made it necessary to rush to retain nuclear parity between the Soviet Union and the United States, work was based on this method. The "layer cake" was the basis for the hydrogen bomb tested at Semipalatinsk Test Site on August 12, 1953, designated RDS-6s (the test called by the Americans as "Joe-4"). The author describes the dramatic events related to this test as follows. "...in August 1953, the first Soviet hydrogen bomb was successfully tested on the tower of the Semipalatinsk Test Site. Our calculations were confirmed; it was a complete triumph. In a few months Andrei Sakharov would become a Doctor of Physics and Mathematics, Academician, Laureate of the Stalin Prize, Hero of Socialist Labor, and proclaimed, despite his young age, the "father" of the hydrogen bomb... No one doubted at the time that we would continue further down our own, domestic path, developing our first success still further. However, toward the end of 1953, at the very height of euphoria and, it would seem, against all logic, events began to develop in an entirely different direction."

The country's Soviet and Party leadership decided to develop a more powerful, next-generation thermonuclear charge and corresponding intercontinental ballistic missile. The missile was developed, and it was this very rocket that lifted the first artificial satellite into orbit in 1957, as well as the spacecraft with Yuri Gagarin on board in 1961.

In Arzamas-16 they began to search for new ways to build a thermonuclear warhead. And they were found, thanks to the efforts of the large numbers of theorists there, which in addition to

Yakov Zeldovich and Andrei Sakharov's groups included groups led by Igor Tamm and Nikolai Bogolyubov as well. In November 1955, a new bomb design was tested; Lev Feoktistov directly participated in its creation. At that time he was already working in the Urals, at Chelyabinsk-70, where he had moved with a large group of colleagues from KB-11 in September 1955. Feoktistov worked 22 years in the Urals, making a clear contribution to the creation of a large number of "special items," defending his doctoral dissertation, and obtaining many state awards, including the Star of the Hero of Socialist Labor and the Lenin Prize; he was elected a corresponding member of the Soviet Academy of Sciences, and became first deputy scientific director of the institute.

Today, Feoktistov's colleagues in the weapons field recognize that his ideas were decisive in the creation of the warheads developed at Chelyabinsk-70. For instance, Deputy Scientific Director of the All-Russian Scientific Research Institute of Technical Physics (VNIITF) Vadim Simonenko writes in his memoirs about Feoktistov as follows: "Therefore, when I assert 'there is just one Lev,' what I have in mind is that he was a unique source of ideas, a significant proportion of which have already been realized, while some still await their turn.... Essentially, the basis of our institute's development rests to a considerable degree on Lev's ideas. And with this in mind, if one were to speak about the personal influence, let us say, of Sakharov or Zeldovich on the creation of Soviet or Russian nuclear weapons—not timing, but as far as the realization of ideas are concerned—then I would put Lev first."

Lev Feoktistov characterized the special atmosphere that was established at the new facility as follows: "the ambitious, overwhelmingly young people in Chelyabinsk, who thanks to the transfer no longer felt, figuratively speaking, 'the oppression of the venerable,' and feeling a personal responsibility for the work they had been given (an instructive phenomenon, isn't it?), soon enough began to obtain the foremost positions, earning their right to an important place in the spirited competition with other organizations in the same field." One can point to several achievements as examples of this. For instance, already in 1957 a hydrogen bomb designed in Chelyabinsk-70 had been tested and put into series production for the military. It was for participation in its design that Feoktistov received the Lenin Prize in 1958.

Feoktistov considered Chelyabinsk-70's main achievement in military affairs to be the miniaturization of nuclear warheads. In the chapter "Chelyabinsk-70, stepbrother of Arzamas-16," he writes that "it was here, in the beginning of the 1960s, independently of U.S. designs, that the bases for multiple reentry vehicles were developed; this term came to designate a group of warheads located on one delivery vehicle." The trend towards miniaturization was not only true with respect to strategic weaponry. Chelyabinsk-70 became a monopolist in the creation of artillery-fired nuclear projectiles. These small-scale weapons (which had as an indispensable requirement the fact that they were externally indistinguishable from conventional, nonnuclear projectiles) obtained significant force thought methods borrowed from multiple reentry vehicles. Incidentally, this is the very projectile type that was transported from East Germany and stolen by criminals in a captivating story that is also included within the covers of the book currently under review, a story of which Feoktistov is also the author.

Concluding the survey of his activity in Chelyabinsk-70, Feoktistov reviews the development of so-called peaceful nuclear explosives, which were created to solve various applied industrial problems. He notes a very important motive for the work on these charges: "... each of us, in a very human way, greatly wanted the labor to which he was dedicated to bring a direct benefit to society, in this we saw a certain element of internal rehabilitation." Here he undoubtedly is speaking of the realization of the destructiveness of the weapon that was created with the author's participation and the desire to justify himself in his own eyes and in the eyes of future generations. Maybe this moral promise was what served as a *detonator* of the internal changes in the author that led him from *weapons* into *pure* science.

Not long before his departure, Feoktistov wrote a letter to Yefim Slavsky, who headed the Ministry of Medium Machine Building for many years, in which he proposed ending nuclear testing and thus giving the country's leadership the possibility to come out with a winning political initiative at the height of the Cold War. This letter was given a classified designation, and access to it was forbidden even to associates of Feoktistov. The author writes that the letter

had a certain political side to it and, without wanting to compare himself to Sakharov, nevertheless notes that "it was something like the time when Sakharov's books were banned."

Minister Slavsky let him move to Moscow, but only on the condition that he continue to work in the Medium Machine-Building system; the nuclear ministry did not want to end up with a "second Sakharov." Feoktistov went to work at the Kurchatov Institute. Here he once again worked on defense projects, particularly laser weapons. He only managed to transfer to an academic institute in 1988: the Lebedev Physics Institute (FIAN) of the Russian Academy of Sciences, where he had been trying to go ever since he left Chelyabinsk-70.

He headed the FIAN Department of Laser Thermonuclear Fusion. Here, together with Academician Nikolai Basov, he continued to study various types of nuclear and thermonuclear reactors, work he had already begun in Chelyabinsk-70. The loud anti-nuclear power campaign that unfolded after the accident at the Chernobyl NPP cut Feoktistov to the quick, bringing into question his dream of using the enormous number of achievements obtained in the course of creating nuclear weapons to peaceful use. Therefore, one of the main avenues of Feoktistov's work during his last years was on a new concept for the construction of a nuclear reactor with internal, physically inherent safety systems. In his opinion, the ideal reactor should be such that any operator errors would lead the nuclear reaction to cease through internal mechanisms in accordance with the laws of physics.

Thanks to this research, the concept of the hybrid reactor was developed: a system combining elements of fission and fusion. The proposed reactor would include a subcritical nuclear assembly that is irradiated by an external neutron source, created through the compression of a thermonuclear target with laser beams. If the laser does not operate for any reason, including operator error, then the reactor simply would not start. In Feoktistov's opinion, only time will tell if the hybrid reactor is completely independent or just one step in the mastery of thermonuclear energy.

Academician Feoktistov supported the program to import spent nuclear fuel (SNF) and reprocess it in Russia, and even justified it in the State Duma. His arguments were as follows. First, the accidents at Mayak and Chernobyl taught the expert nuclear physicists there how to work with these materials better than anyone else in the world. Second, SNF potentially has great value as a source of nuclear material that can be extracted and sold on the world market. Thus, the realization of a comprehensive SNF program could ensure funding for the development of a new generation of physically safe reactors, as well as ecological and social programs in the nuclear sphere.

Despite his participation in military nuclear programs, or rather, most likely due to this very circumstance, Feoktistov spoke actively in favor of a radical reduction of nuclear weapons, up to and including their complete elimination. In 1999, when it was already clear that the plan proposed by Mikhail Gorbachev to get rid of all nuclear weapons by 2000 was not going to happen, he wrote in his book *Nukes Are Not Forever*: "Nuclear weapons have existed for 50 years.... You think with horror that they will exist another 50 years, and the lives of our grandchildren and great-grandchildren will remain under the threat of complete destruction... The assertion that in 50 years there have not been any great wars thanks to nuclear deterrence, in my view, is groundless. Especially since there have been wars—although not global in scale, but many years in length."

He contended that unforeseen circumstances where nuclear weapons might be used are less probable in a nuclear-free world, when there is global control over the spread of nuclear weapons that is both strict and obligatory both for former nuclear and for nonnuclear states. In 2000, at a conference in U.N. headquarters, Academician Feoktistov proposed that the United States, as the recognized world leader, play a leading role in the process of global nuclear disarmament, proposing a program of total disarmament to the nuclear states by, for instance, the year 2010.

The final document by Feoktistov published in the book is a draft address to Russian President Putin with a specific proposal on the organization of the development of a new generation of nuclear reactors that are safe from the point of view of the proliferation of nuclear materials

directly suitable for the construction of a nuclear weapon. This document is dated January 2002; in February of the same year Lev Petrovich's heart stopped.

The uniqueness of the book reviewed here, and the uniqueness of its main hero and author, lie in the fact that under one cover we find a compilation of the recollections of both *bomb makers* and academic scientists. The *weaponeers* either neutrally present the facts and Feoktistov's contribution to science, or do not agree that nuclear weapons have outlived their usefulness. The representatives of "pure" science either do not deal with these questions or support Feoktistov. He alone, during the course of his life, was transformed from a *bomb maker* to a convinced supporter of total nuclear disarmament and was willing to state this publicly, defending his ideas. Many people directly involved in the creation of nuclear warheads have left Chelyabinsk-70 at various times, but only Lev Feoktistov became a figure of significance, who was not afraid publicly to voice his views, although they frequently did not coincide with those that were commonly accepted.

BETWEEN VENGEANCE AND RETRIBUTION: A NEW VIEW OF THE MOSSAD'S MOST MYSTERIOUS OPERATION

Aaron J. Klein, *Striking Back: The 1972 Munich Olympics Massacre and Israel's Deadly Response* (New York: Random House, 2006).

Reviewed by Konstantin Eggert

As the eight Black September gunmen climbed over the Olympic Village fence in Munich on September 5, 1972, they could hardly imagine the full consequences of their actions. All they wanted was to exchange the hostages for a couple hundred Palestinian inmates in Israeli prisons. Their intention was to attract as much notice from the press as they could. However, they hardly expected that they would enter into history and would possibly even change its course. Twenty-four hours later most of the terrorists and all of the hostages were dead, while the so-called Kitchen Cabinet of Israeli Prime Minister Golda Meir made a decision to launch a campaign of retribution unprecedented in its duration and in resources spent, against the Black September organization and, essentially, against the Palestinian leadership as a whole, as well as its international representatives.

Up until this point, the famous best seller *Vengeance,* written by the Canadian author George Jonas and published in 1984, has been considered the main, albeit rather fragmentary, source of information on the subject. Steven Spielberg based his film *Munich* on that very book. The American director portrays the Mossad agents not as "knights without fear, blemish, and doubt," but as people who, in the end, begin to question whether their mission is worth all the sacrifice. Precisely this caused the mixed, if not angry, reaction of many in Israel.

Six years prior to Steven Spielberg's film, director Kevin MacDonald made a documentary entitled *One Day in September*. The detailed reconstruction of the Munich tragedy earned the film an Oscar. MacDonald presented the West German officials in an unsavory light, including Hans-Dietrich Genscher, who was West Germany's Minister of Internal Affairs in 1972. German officials are shown as callous and incompetent. In addition, the director tracked down the only remaining terrorist still alive, Jamal al-Jashi, who told his version of the events for the first time on camera.

Aaron Klein, a war correspondent for *Time* magazine's Jerusalem bureau, set himself the goal of making the first significant contribution to the debate since Jonas and MacDonald. He had good reason: Aaron Klein had previously served as a captain in Israeli military intelligence, which allowed him to rely on the singular ties that are only available within the self-enclosed intelligence community. *Striking Back: The 1972 Munich Olympics Massacre and Israel's Deadly Response* presents the inside perspective on the 20-year anti-terrorist marathon, i.e. the viewpoint of those who directly participated in the assassination plots against the PLO members.

Klein's prose does not rise to the level of the classics of documentary journalism, such as Mark Bowden's *Black Hawk Down: A Story of Modern War* and *Killing Pablo: The Hunt*

for the World's Greatest Outlaw. His style is that of a military officer accustomed to expressing himself simply and clearly. The strengths of *Striking Back* are not its literary embellishments but rather heretofore unknown facts and testimonies by the Mossad operatives.

Klein begins with a detailed analysis of the events immediately preceding the hostage taking. And from the outset, he offers eye-openers: while until now the charge of incompetence has been laid at the feet of German officials and policemen, *Striking Back* hits at the Israeli bureaucracy who, according to Klein, carelessly brushed aside the warnings that came from head of the Munich Israeli delegation Shmuel Lalkin. Lalkin kept saying from the very beginning that the Israeli athletes' security at the Olympic village was not being provided for in any meaningful way. The Germans' desire to make the world forget about the 1936 Olympics, which were a highlight of the Nazi propaganda machine, played a dirty trick on them and turned into a tragedy for the Israelis. The authorities in Bavaria and West Germany were eager to reveal the new image of a pacifist, safe, and benevolent Germany. They deemed the presence of armed police at the Olympic sites undesirable. They spent only U.S. $2 million on security needs, which is not much, even when adjusted for 30 years of inflation. For comparison, Klein cites the $1 billion spent on the 2004 Olympics in Athens. However, even had the police been at the Olympic village on that fateful day in September, it is no guarantee that they would have been able to undertake anything: West Germany at the time did not possess even a single qualified anti-terrorist police specialist, not one professional negotiator, not even a single professional sniper. In addition, while the Bavarian officials were as apprehensive of the federal authorities as they had been traditionally, the federal authorities were dead set against allowing an Israeli special troops unit to launch a hostage rescue operation in Munich.

Klein's analysis of the errors made by the German police reaches the point of highest intensity during his recounting of the massacre that took place at the Fürstenfeldbruck Air Base. The reader of this chapter comes to the realization that the fate of the nine athletes captured by the Palestinian gunmen had been effectively predetermined.

German authorities have conducted an investigation of the terrorist act. The results have been kept top-secret for almost 20 years. Many may find that Klein shows some bias, as he does not hide his sympathies for the relatives of the murdered Israelis who for 20 years sought to declassify the archived documents and for almost another decade to receive compensation from the West German government.

Klein, however, is equally critical of the Israelis. *Striking Back* reveals the decision-making mechanism behind the launch of the retaliatory operation—it was an insider decision based on a nebulous strategy—as well as the state of the Israeli intelligence community destined to carry it out. Here is but one example: Cesaria, the top-secret subdivision within Mossad that got the task in 1972, did not even have a television set with a satellite antenna to receive Arabic TV channels. Moreover, if we are to believe Klein, only the Munich tragedy forced the Israeli political establishment to engage seriously in developing a global intelligence network and to systematize the disparate data on Palestinian organizations.

Klein interviewed dozens of participants in the retaliatory operation. Some later retired and built political careers, as did Ehud Barak, who subsequently became chief of the general staff and later prime minister. Others conceal their identities even today, since they are still on active duty in Mossad. From the time of the assassination of the first suspected co-conspirator in the Munich affair, the murder of the PLO representative Wael Zuaiter in Rome in 1972, until the execution of the Palestinian Security Service representative Atef Bseiso in Paris in 1992, two decades have elapsed, while significant staff rotations have occurred within Mossad. What remained unchanged, according to the author, were lists of the Palestinian officials targeted for assassination. The majority of the retaliatory operations was authorized by Israeli prime ministers. Some of them did it unwillingly, some did it enthusiastically, but Klein leaves no doubt about the fact that these convictions in absentia often led to murdering innocents. For instance, it is doubtful that the poet and translator Zuaiter, while he was sympathetic toward the terrorists, took part in planning the terrorist acts. The

same may be said about Mahmud Hamshari, a PLO representative in Paris who was assassinated by a bomb planted in his home telephone set.

Among the victims of assassinations were also those who had spilled the innocent blood of Israelis, Europeans, and Americans. One such man was Wadie Haddad, one of the kings of Palestinian terror, a leader of the Popular Front for the Liberation of Palestine, a radical wing of the Arab Nationalist Movement. He died in 1978 as the result of a sudden and agonizing illness. Klein discloses for the first time the mystery of Haddad's death, which resulted from a cunningly planned and effectively carried out lethal poisoning.

The drive to avenge Munich was so powerful that the degree of participation in the Munich terrorist act by any given Palestinian was of little importance to Mossad and the Israeli cabinet. That Aaron Klein comes to this conclusion is surprisingly candid for a former intelligence agent. In fact, even Black September—the hunt for whose leaders launched the whole operation—was a semi-mythical organization. Behind this name, Klein reminds the reader, stood the leaders of the PLO. The Mossad operation with time turned from a retaliatory act avenging the athletes' death into a total war against all Palestinian organizations of any kind, from Arafat's Fatah to small terrorist cells.

Two suspenseful chapters in the book deserve particular attention. One provides a classic example of a successful special operation, the other a classic example of failure. On April 9, 1973, a group of Israeli commandoes landed on a beach in Beirut and attacked a building that housed prominent Palestinian leaders, including Fatah field commanders Kamal Adwan and Abu Yussef el-Najar, as well as the chief of PLO propaganda Kamal Nasser. All three were assassinated within minutes. The operation, codenamed Spring of Youth, entered special forces training manuals around the globe. During the same year, 1973, a Mossad combat team shot an Algerian waiter with a Moroccan passport, Ahmad Boushiki, in Lillehammer, Norway, mistaking him for Ali Hassan Salameh, commander of Force 17, a special troops unit that served as Yassir Arafat's personal guards. Many years later, Israel paid compensation to the waiter's family. The colossal failure of the Israelis was exacerbated by the fact that some members of the combat team were arrested and convicted in Norway. This blunder seriously damaged Israel's image in Europe and tarnished the notion that Israeli Special Forces are 100 percent effective. However, six years later in Beirut, Mossad did find and assassinate Salameh.

To some extent, *Striking Back* does not simply tell a story of a particular operation but traces the history of Mossad's inception and development. Israeli intelligence agencies learned from their mistakes and, in the end, won the war against PLO terrorists. Today, the veterans of the Palestinian resistance movement of the 1970-80s are among those who support head of the Palestinian Authority Mahmud Abbas and are ready to compromise with Israel.

To use boxing terminology, however, Mossad's victory was by points, rather than by a knockout. It would have hardly been possible without the destruction of the PLO infrastructure in Lebanon, carried out by the Israeli army in 1982; without the collapse of the socialist bloc and the Soviet Union, which had been an important international ally to the Palestinians; or, finally, without the catastrophic financial shortages and isolation within the Arabic world that resulted from Yassir Arafat's support of the Iraqi invasion of Kuwait in 1990. The combination of these and other factors forced Arafat and the PLO to seek, albeit unwillingly and without full sincerity, compromise with Israel.

Striking Back gives its due to the self-sacrifice and professionalism of Mossad agents. At the same time, Klein admits that the price of the Israeli victory over PLO terror is high both in a monetary sense and, more importantly, in a moral sense. For that, the book by a former captain of military intelligence earns the reader's trust.

As an aside, the three chief plotters of the Munich raid escaped Israeli retribution. Two of them, Salah Khalaf (Abu Iyad) and Fakhri Al-Umri were assassinated in 1991 by a Palestinian member of the renegade Abu Nidal group. The third, Muhammad Aude (Abu Daoud) is still alive and

lives in Damascus. In a December 2005 interview with the London *Times*, Daoud refused to apologize for the kidnapping that led to the athletes' deaths.[1]

Notes

[1] Ian McKinnon, "I do not regret athletes' death, says Munich massacre plotter," *Times*, December 28, 2005 <http://www.timesonline.co.uk/article/0,,251-1961099,00.html>, last accessed January 13, 2007.

THE PUBLICATION OF THE FIRST ISSUE OF *SECURITY INDEX*… IS NO DOUBT A VERY NECESSARY AND TIMELY EVENT

To the Editor-in-Chief,

Today no one would doubt that by combining efforts on the basis of the observance of international norms and principles, the global community can successfully oppose the threats and challenges of our time.

Understanding the importance of collective efforts in solving these problems, Russia is working to develop the most active cooperation in the security sphere.

In this regard, the level that has been reached on questions of Russian cooperation with leading European and Euro-Atlantic organizations is particularly significant.

Even very recently it would have been difficult to imagine, but in the 21st century we have been successfully tackling the most urgent problems of mutual interest in many areas.

The publication of the first issue of *Security Index*, which is intended as a clear and reliable source of objective information on Russian foreign and defense policy not compromised by politics and ideology, is no doubt a very necessary and timely event.

I am certain that the new publication will engender a lively response, not only from politicians and experts in the sphere of international relations but also from representatives of scientific and business circles.

Sergei Ivanov
The First Deputy Chairman
The Russian Federation Government
Krasnopresnenskaya Quay, 2
Moscow, 103274, Russia

I AM COUNTING ON YOUR EXPERT ASSISTANCE

To the Editor-in-Chief,

Congratulations on the publication of the first issue of *Security Index*. I view this as persuasive confirmation of the need for the research that your Center has been carrying out over the

course of over a decade on a broad range of international security topics, including disarmament and nonproliferation.

The results of your work are of particular interest for the country's foreign policy agencies, given the relapses into a policy of the unilateral use of force that have caused small countries to feel that security is scarce and pushed large countries towards increasing weapons procurement. The continuing stagnation, though no fault of Russia, in the area of disarmament as well as the increasing potential for conflict in the world as a whole are also causes for concern.

I am counting on your expert assistance in the search for effective responses to the challenges and threats associated with large-scale international terrorist activity, the weakening of the nonproliferation regime, the aspirations of several countries to untie their hands in order to weaponize space, as well as the misuse of information technologies.

I wish the Center staff the best of success in their work, and hope that the journal will find its way to numerous readers.

Sergei Lavrov
Minister
Russian Ministry of Foreign Affairs
Smolenskaya-Sennaya Square, 32/32
Moscow, 121200, Russia

SECURITY INDEX SHOULD BECOME AN EFFECTIVE AND RELIABLE AIDE IN SOLVING THE SIGNIFICANT ISSUES THAT STAND BEFORE RUSSIA'S NUCLEAR BRANCH

To the Editor-in-Chief,

Today nuclear power is enjoying a rebirth worldwide. The Russian nuclear power industry has a big job ahead of it: increasing the share of nuclear power in the nation's energy production to 25%, and in the future to 30%, with the launch of at least two new nuclear power units each year. Maintaining the nation's nuclear weapons complex at the level needed to ensure national security is equally vital. Russia plays a leading role in mobilizing international efforts to strengthen the nuclear nonproliferation regime. A concrete example is Russian President Vladimir Putin's initiative to create international nuclear fuel cycle centers.

Given these circumstances, the professional and timely examination of questions related to nuclear power and nuclear nonproliferation is of practical interest to everyone working in the Russian nuclear power industry.

During its 12 years of existence, the PIR Center's journal *Yaderny Kontrol* won the recognition of specialists throughout the nuclear industry, becoming one of the most authoritative sources of information on questions related to nuclear power and WMD nonproliferation. I hope that the PIR Center's new journal, *Security Index*, which is its successor, will maintain an editorial policy of *loyalty* to covering nuclear issues.

I would like to take advantage of this occasion to congratulate the staff of the PIR Center for Policy Studies (Russia) on the publication of the first issue of *Security Index*.

The PIR Center's professionalism and energy make us confident that the publication will become an effective and reliable aide in solving the significant issues that stand before Russia's nuclear branch.

Sergei Kiriyenko
Head
The Federal Atomic Energy Agency
Bolshaya Ordynka Street, 24/26
Moscow, 109017, Russia

THERE IS NO REASON TO DOUBT THE RELEVANCE OF THE NEW PUBLICATION

To the Editor-in-Chief,

The *Rosoboronexport* State Corporation would like to congratulate the PIR Center with the first issue of the journal *Security Index*.

There is no reason to doubt the urgency of the new publication and our cooperation.

Special international legal mechanisms have been devised to monitor transfers of military equipment in the global arms trade. Russia values its reputation on the global arms market and therefore implements all relevant control measures with particular care.

As one of the top five exporters, which supplies armaments and military equipment to more than 60 countries, Russia does not permit exports that might undermine regional stability, aggravate crises, or violate embargoes or other international agreements.

Given globalization, we believe that the Russian system for military and technical cooperation, in which the *Rosoboronexport* State Corporation plays a leading role, can play a positive role in developing international military cooperation, providing for national and collective security, maintaining global stability, stimulating economic growth, and improving people's quality of life.

I wish *Security Index* continuing success in the international dialogue aimed at a comprehensive analysis of security issues and the search for the best possible ways to harmonize intergovernmental and international relations.

Best of luck, my dear friends!

Sergei Chemezov
General Director
FGUP Rosoboronexport
Gogolevsky Boulevard, 21
Moscow, 113324, Russia

A WELL-DEFINED AND TOPICAL NAME

To the Editor-in-Chief,

Please accept my congratulations to you and your colleagues at the PIR Center on the publication of the first issue of your updated journal, which has come out under the well-defined and topical name *Security Index.*

In today's complex and globalized world problems related to ensuring security—in the broadest sense of this word—have once again come to the fore for the entire global community. These problems require qualified professional analysis that takes into account both current geopolitical realities and the long-term prospects for the development of the military and political situation in the world as a whole, as well as in its various regions. Only with a clear understanding of the driving forces of global processes, as well as the sources and fundamental nature of new threats, can one develop solutions to ensure global strategic stability and Russian national security.

The new publication's predecessor—the journal *Yaderny Kontrol*—did a great deal to inform the public in our country and abroad on issues such as nonproliferation of weapons of mass destruction, arms control, and international security. I hope that the journal's new format will

make it possible to expand the topics it covers, attract new, interesting authors, and more deeply investigate the processes now taking place in the world.

Yury Baluevsky
Chief of the General Staff
Russian Federation Armed Forces
K-160, Znamenka, 19
Moscow, 119160, Russia

THE STRENGTHS OF THE STATE, THE BUSINESS COMMUNITY, THE MEDIA, AND INDEPENDENT ANALYTICAL ORGANIZATIONS MUST BE BROUGHT TOGETHER TO FIND EFFECTIVE AND NONTRIVIAL ANSWERS TO NEW CHALLENGES

To the Editor-in-Chief,

The appearance of a new publication always engenders interest and attention, particularly when the journal is the successor to a well-known journal like *Yaderny Kontrol*. During the years of its existence, *Yaderny Kontrol* became one of the most authoritative sources of information on current international security issues for both Russian and foreign experts. Over time the journal expanded—not only in terms of the numbers of pages and the quantity of authors and interviews it attracted, but also in terms of the extent and breadth of the issues and events that it covered.

Despite the fact that the name *Yaderny Kontrol* became quite well known and was virtually a business card for the PIR Center and Russian analysis on WMD nonproliferation and arms control issues, the considerable broadening of issue areas touched upon in the journal's pages made the changing of its name a logical step in the formation of an expert dialogue in Russia on issues related to security.

The journal's new name reflects the fact that the publication, like all of the PIR Center's academic analysis, exceeded the realm of nonproliferation long ago and now includes all of the fundamental security issues that are of concern in the 21st century. This expansion of topical areas is extremely well timed, as it takes into account the increasing complexity and multiplicity of factors involved in the security problems facing the global community and our nation at the present time.

In recent years, along with classic 20th century problems such as regional crises and conflicts, we are more frequently hearing of and recognizing ever more serious threats, the problems of terrorism, political and religious extremism in its various manifestations, separatism, the illegal narcotics trade, human trafficking, environmental and man-made catastrophes, the threat of the proliferation of weapons of mass destruction, organized crime, etc.

Regardless of the order in which we enumerate these problems, it is clear that together they have a very strong and very dangerous explosive potential and directly effect the security both of individual states and the entire international community.

The quality of the answers to these threats, to traditional threats, as well as to the new challenges to national and global security in many ways depends on bringing together the efforts of the entire world, including Russia. It is critical that state organizations, the media, nongovernmental organizations, businesses, and independent analytical organizations like the PIR Center are brought together to find effective and nontrivial answers to the challenges and threats. I am certain that the new journal *Security Index* will be as necessary to people involved in working out solutions in the security sphere as its predecessor, Ya*derny Kontrol*, was before it.

I would like to refer to the definition of the word "index," which means an indicator of the development, change in processes, and phenomena during a particular period of time. We have just seen this in the table, and on behalf of the Security Council staff would like to wish for the new journal that this indicator would always remain valid, strictly calculated, and scientifically substantiated so that it may help all states, nongovernmental organizations, and all of humanity in the search for realistic means to combat current threats.

The best of success to the new journal!

Valentin Sobolev
Deputy Secretary
The Russian Security Council
Ipatyevsky Side Street, 4/10
Moscow, 103132, Russia

THE PIR CENTER IS ONE OF THE MOST DYNAMIC, DEEPEST, AND MOST CREATIVE THINK TANKS IN RUSSIA

To the Editor-in-Chief,

It is not every day that a Russian policy journal is launched. And it is definitely not every day when such a journal is launched not only in Russian, but also as an *international edition* – in English. This fact alone already would have raised attention to the final product.

But *Index Bezopasnosti*, or *Security Index* – this is the title of a newborn publication – is also unique because it a result of work of a Russian *non-governmental* research and policy institute. For 14 years, the Center for Policy Studies – known by its Russian acronym as the P.I.R. Center – has been a most dynamic, creative and thoughtful think tank in Russia dealing with a wide range of international security issues, from nuclear nonproliferation to critical infrastructure protection, from regional security issues in Central Asia to energy security. It has successfully attracted the attention of those audiences who usually are not starving from a lack of information or analytical papers: from foreign policy practitioners to the business community, from media to legislators.

I should say that the Center for Policy Studies, dealing a lot with proliferation, has finally become a proliferator itself: It is now proliferating its knowledge, analysis and assessments into Geneva, and through Geneva – to Europe and worldwide.

Today we are witnessing an important step: *Centre russe d'études politiques* has been established in Geneva, as a partner of and a European platform for the Moscow-based PIR Center. It is a bold move by a Russian NGO.

But I am glad to see that this move has already been converted, under the energetic leadership of Vladimir Orlov, into a very practical project. Just open this journal – which you either have already received or will receive right after this reception – and you will find a number of articles, a number of points which are critical to better understand Russia, to *read Russia right*. Whether it is the situation in the Middle East, or competition over resources of the Caspian, policy towards Iran or a future of the INF treaty, - read this journal, and after this reading you will know for sure that you are better prepared, better equipped to follow the logic of Russia's foreign and security policy as well as follow a debate over this policy going on in Russia.

This journal – and, I am sure, the mission of the newly established *Centre russe d'études politiques* – is also about *dialogue*. Look at the article written for *Security Index* by a US bestselling journalist, David Hoffman, on unknown pages of the worst times of the cold war in 1983. Look at the documents he has revealed. The two sides did not listen to each other! And that could lead to a global catastrophe.

The security dialogue, launched on the pages of *Security Index*, helps us all better listen to each other, hear each other, and work together on cooperatively building the new security architecture of a new multipolar world.

Valery Loshchinin
Permanent Representative of the Russian Federation
to the United Nations Office and other International
Organizations in Geneva
Mission Permanente de la Russie, 15 Avenue de la Paix,
1211 Geneva 20, Switzerland

I AM FLATTERED THAT YOU CHOSE GENEVA

To the Editor-in-Chief,

I want to express my most heart-felt congratulations for the launch of your new publication. I had the privilege to receive the first edition of *Security Index* just freshly out of the printing office and I had a look at it. I'm very much impressed by the quality of the authors and by the quality of their analysis. *Security Index* is a most valuable contribution to modern security policy thinking.

We are particularly honored and proud that you choose Geneva not only for the launching of the international edition of your publication but also for the presence of the european branch of the PIR-Center, the *Centre russe d'études politiques*. Geneva understands itself as a platform for the international community. It is there to serve all of you: individuals, thinkers, organisations and states. We know there was a strong competition from other cities and you have chosen Geneva. Geneva is perfectly neutral. Geneva is perfectly linked to other institutions in modern security. And if you are once tired of thinking, the fantastic ski slopes of Crans Montana, Verbier and Zermatt are very close. But we are also very happy for historical reasons that you chose Geneva. In fact, some time ago, the University of Geneva had more Russian than Swiss students.

So, we wish you, the new publication and the new branch of your center all the best you can achieve. We wish you a long life, we wish you a good health, we wish you strength, and we wish you a major impact on international security.

Erwin Hofer
Ambassador of Switzerland to the Russian Federation
Ogorodnaya Sloboda Side Street, 2/5
Moscow, 101000, Russia

TO OBTAIN NEW AUTHORS AND NEW READERS

To the Editor-in-Chief,

For many years I have been a reader of and author published in *Yaderny Kontrol,* and therefore have mixed feelings about the editorial board's decision to rename that publication.

On the one hand, *Yaderny Kontrol* was, I would say, the most authoritative and, even more importantly, influential Russian publication devoted to the issues of arms control, security, and nuclear nonproliferation. The opinions of the journal's authors had a noticeable effect on the

course of discussions within the Russian expert community while the materials that were published provided a direction for academic debate.

On the other hand, changing the journal's name to *Security Index* reflects the expansion of threats that has occurred in recent years and the need for the journal to appear in a new form: as a Russian journal on international security. And this will offer its readers new interesting topics and new possibilities for discussion.

I am confident that broadening the range of problems discussed in the publication will not lead to a reduction in the depth of analysis, and will enable the editorial board to pay even more attention to both the technological and political aspects of security issues, while maintaining the priority of nuclear security. I would like to see the journal not simply focus on an analysis of contemporary threats to international and national security, but also look to tomorrow and the potential problems and challenges that we will face as high technology spreads throughout the world. The journal's new approach towards choosing topics of interest should make it possible to include such important subjects for the future of Russia as the country's technological development and its economic competitiveness in the sphere of high technology on world markets.

I hope that the PIR Center's journal will not simply preserve and build upon the authority that *Yaderny Kontrol* earned within the expert community, but also acquire new authors and readers for whom the journal *Security Index* will become the No. 1 academic publication!

Nikolai Ponomarev-Stepnoi
Vice President
The Russian Research Center Kurchatov Institute
Kurchatova Square, 1
Moscow, 123182, Russia

A PLATFORM FOR DISCUSSION ON ENERGY ISSUES

To the Editor-in-Chief,

Today we are tackling the problem of sustainable energy supply to the mankind. And me as a scientist, I'm convinced that it is nuclear energy which will be serving the mankind and serving for the purpose of energy supplies for hundreds and even thousands of years. And the task we have in front of us today is twofold. On the one hand we have to learn to use the most advanced, the newest nuclear technologies. And on the on the other hand we have to secure the nonproliferation of WMDs. And the attainment of such tasks cannot be provided only through just technology. In order to resolve this task we need both the political, scientific and social communities to be brought together in order to tackle multifold political, social and other measures of providing the energy security.

I'm convinced that the journal will provide all the necessary information and insight in how it can be attained. I would like to wish success to the journal, to the authors and to all of us.

Anatoly Zrodnikov
Director,
State Scientific Center of the Russian Federation –
Institute For Physics and
A.I. Leypunsky Institute for Physics and Power Engineering
Bondarenko Square, 1
Obninsk, 249030, Kaluga region, Russia

PIR CENTER PUBLICATIONS ARE AN IMPORTANT SOURCE OF KNOWLEDGE FOR STUDENTS AND YOUNG SPECIALISTS

To the Editor-in-Chief,

I would like to send my greetings and congratulations to the associates of the PIR Center for Policy Studies in Russia upon the publication of the first issue of *Security Index*!

Over the course of many years, the PIR Center's publications have been an important source of knowledge for students and young specialists taking their first steps in learning about international security and international relations, as well as for experts who have already received their degrees and are participating directly in the formation of Russian foreign policy on a daily basis. I am certain that *Security Index* will also occupy an important place on the desks of Russian specialists who are professionally engaged in international security issues.

It is pleasant to note that the PIR Center has always paid special attention to educational activities, providing access to the pages of its publications not only to acknowledged experts, well-known scholars, and practitioners, but also to young researchers. At the same time, the Center has actively sought out graduates of regional universities to work with it. It is therefore no accident that MGIMO has been a member of the PIR Center Advisory Board for many years: we see this independent academic research institute as a worthy partner in training young experts in the area of international security.

It is doubly pleasant that the reigns of the PIR Center are in the hands of two MGIMO graduates—the chairman of the PIR Center Executive Board is Ambassador Extraordinary and Plenipotentiary Roland Mikhailovich Timerbaev while the director of the Center is Vladimir Andreevich Orlov—which makes it possible for us to consider the PIR Center's successes and achievements as our own.

I wish *Security Index* a pleasant voyage through the stormy seas of the world's oceans and Center associates new creative successes and accomplishments! Sincerely,

Anatoly Torkunov
Dean
Moscow State University for International Relations (MGIMO) of the Russian Ministry of Foreign Affairs
Vernadsky Avenue, 76
Moscow, 119454, Russia

Baluevsky, Yury Nikolaevich, Chief of the Russian Federation Armed Forces General Staff, First Deputy Minister of Defense of the Russian Federation, Army General. Born in 1947 in Truskavets, Lvov Oblast, Ukraine. Graduated from the Leningrad Higher Joint Forces Command School in 1970, from the Frunze Military Academy in 1980, and from the USSR Armed Forces General Staff Military Academy in 1990. In 1982-88 served in leadership positions in the Main Operations Directorate of the USSR Armed Forces General Staff. In 1990 became deputy head and then head of the Main Operations Directorate of the General Staff. In 1993-95 was head of staff and first deputy commander of the Russian Forces in the Caucasus Region. In June 1995 became directorate head and deputy director of the Main Operations Directorate of the Russian Federation Armed Forces. In August 1997 because director of the Main Operations Directorate of the Russian Federation Armed Forces. In June 2001 was named first deputy director of the Russian Federation Armed Forces General Staff. In July 2004 appointed director of the Russian Federation Armed Forces General Staff and first deputy defense minister of Russia. In November 2004 appointed chairman of the CIS Council of Heads of General Staffs.

Eggert, Konstantin Petrovich, Editor-in-Chief of the Moscow bureau of the BBC Russian Service member of *Security Index* editorial board. Born in 1964. Graduated from Moscow State University's Institute of Asian and African Countries in 1987, where he studied history and Arabic. After the university he served in the army as a member of the Soviet military mission in the Yemen Arab Republic. In 1980-90 worked in the Middle East. He worked for the newspapers *Kuranty* and *Izvestia*. He became a diplomatic correspondent for the latter, and then deputy international editor. Since 2002 he has been editor-in-chief of the Moscow bureau of the BBC Russian service. He is a member of the Royal Institute of International Relations in London, a member of the PIR Center Advisory Board, and a member of the board of founders of *the Centre russe d'études politiques, Genève*. Email address: *konstantin.eggert@bbc.co.uk*

Evstafiev, Dmitry Gennadievich, independent expert. Born in 1966. Graduated from the History Department of Moscow State University's Institute of Asian and African Countries with honors in 1989, then served as a junior research associate, and then research associate, at the RAS U.S. and Canada Institute, where he received a degree of candidate in political science in 1993, defending a dissertation in the area of military policy. In 1995-98 worked as a senior, leading expert at the Russian Institute for Strategic Research (RISI). Later served as a senior research associate and project director at the PIR Center. Leading expert on the military and political facets of Russian national security, U.S. foreign and military policy, and regional aspects of nuclear nonproliferation. In 2001-06 worked for the KROS Public Relations Development Company, serving part of that time as vice president. Member of the PIR Center Advisory Board and *Security Index* editorial board.

Evstafiev, Gennady Mikhailovich, PIR Center Senior Advisor, Lieutenant-General (ret.). Born in 1938. He has worked in governmental agencies for over 40 years, including Soviet

embassies in Pakistan and other countries, and the UN Secretariat. In 1986-91 Lieutenant-General Evstafiev participated in CFE negotiations. In 2000-03 he worked in Russian mission to NATO headquarters in Brussels in charge of WMD nonproliferation and arms control issues. Email address: *evstafiev@pircenter.org*

Fedorov, Yury Yevgenyevich, Associate Fellow, Chatham House – The Royal Institute of International Affairs, London, the U.K.; Member of the *Security Index* editorial board. Graduated from Moscow State University's Physics Department. Candidate of Historical Sciences, Professor. Worked at the Sociological Research Institute of the USSR Academy of Sciences. Headed the section on disarmament issues at the Institute for International Economy and International Relations (IMEMO) of the Russian Academy of Sciences. Worked in the international division of the Soviet Communist Party Central Committee, after which, in 1991, he became deputy head of the political science department at MGIMO. In September 1998 he became section head, and in December 2000 head of the division on military policy research at the RAS U.S. and Canada Institute. In 2001-02 he served as deputy director of the PIR Center. In 2002-03 he was deputy director of the Institute of Applied International Research. Several of his academic studies have focused on energy security, particularly of the Caspian region. He is the author of a monograph entitled *Substrategic Nuclear Weapons and Russian Security Interests* (Moscow: *Nauchnyye zapiski PIR Tsentra*, No. 16, 2001). Fedorov is a member of the *Security Index* editorial board. Email address: *yufedorov@rambler.ru*

Frolov, Andrei Lvovich, independent expert. Born in 1979, Frolov graduated with honors from the St. Petersburg State University Department of International Relations. He received a Russian-French master's degree from the Moscow State Institute of International Relations (MGIMO) in 2003. In 2003-06 he was a research associate at the PIR Center, executive editor of *Yaderny Kontrol* as well as editor of the electronic edition of *Yaderny Kontrol.* He is the author and co-author of the articles "The Transformation of the Export Control System in Russia" (*Yaderny Kontrol*, 2004, No. 4), "Brazil's Nuclear Submarine Development Program: Through Squalls to the Depths" (*Yaderny Kontrol*, 2005, No. 2). His academic interests include: Russian nuclear submarines and prospective Russian and foreign armaments. Email address: *frolov@pircenter.org*

Herd, Graeme P., Course Co-Director, European Training Course in Security Policy, Geneva Center for Security Policy, he is also an Associate Fellow, 'International Security Programme,' Chatham House, London and an Honorary Research Fellow, Department of Politics and International Relations, University of Aberdeen, Scotland. Between 2002-05 he was variously Professor of Civil-Military Relations, Associate Director of the Senior Executive Seminar and Faculty Director of Research at the George C. Marshall European Center for Security Studies, Garmisch-Partenkirchen Germany, where he also was a guest lecturer at the NATO School in Oberammergau. Prior to this he was a Lecturer in International Relations at both the University of Aberdeen (1997-2002) and Staffordshire University (1994-97) and a Projects Officer, Department of War Studies, King's College London (1993-94). His Ph.D. examined the role of Scottish mercenary soldiers in Russia in the 17th Century. He is a resident Faculty Member at the Geneva Centre for Security Policy (GCSP). His latest books are: Graeme Herd & Anne Aldis (eds.), *The Ideological War on Terror: World Wide Strategies for Counter Terrorism* (London: Routledge, Taylor & Francis Group, 2007) and Graeme P. Herd and Tomas Forsberg, *Divided West: European Security and the Transatlantic Relationship* (London: RIIA and Blackwells Publishing Ltd., 2006). Email address: *g.herd@gcsp.ch*

Hofer, Erwin H., Ambassador of Switzerland in Moscow for Russia, Kazakhstan and Turkmenistan. Born in 1949. After graduating from the university of Zurich (in law), he entered the Swiss diplomatic service in 1976, working in the Federal Department of Foreign Affairs (EDA). He served in both Berne and Nairobi. In 1982-87 he was appointed to the Swiss Observer Mission to the UN in New York as Counsellor in charge of legal affairs. In 1987-91 he headed the United National and International Organizations section of the EDA in Berne. In 1991-95 he was a Deputy Head of Mission in Budapest, responsible for economic affairs and in charge of the Swiss Economic Program for Central Europe. From 1996 to 2000 he served as Ambassador, Permanent Representative of Switzerland to the Conference on Disarmament and Head of the Multilateral Division of the Swiss Mission to the United Nations and other

International Organizations in Geneva. In 2000-03 he was Ambassador and Head of Political Division III, United Nations, International Organizations, Culture, and Environment, Federal Department of Foreign Affairs, Berne. In February 2004 he was appointed Ambassador of Switzerland in Moscow for Russia, Kazakhstan and Turkmenistan.

Holgate, Laura, Vice President for Russia/NIS Programs at the Nuclear Threat Initiative (NTI), United States. Born in 1965, in 1987 she received a bachelor's degree in political science from Princeton University and in 1990 a master's of political science from the Massachusetts Institute of Technology. Before coming to work for NTI, she held several major posts in government agencies. She managed the Department of Defense's Cooperative Threat Reduction program, held the position of director of the Office of Fissile Material Disposition in the Department of Energy, and is the recipient of several state awards. She is a member of the Women in International Security executive board.

Hoop Scheffer, Jaap Gijsbert de, NATO Secretary General. Born in 1948, he graduated from the law department of Leiden University in 1974 and was called for army service. After completing his military service, he entered the Ministry of Foreign Affairs of the Netherlands. In 1976-78 he worked in the Dutch embassy in Ghana, and in 1978-80 in the Dutch delegation to NATO in Brussels. In 1980, de Hoop Scheffer became the private secretary to the Minister of Foreign Affairs of the Netherlands and held this office until 1986. In 1986-2002 he served as an elected deputy to the parliament of the Netherlands. In 1987-94 de Hoop Scheffer was a member of the Netherlands parliamentary delegation to the Council of Europe and the Western European Union, and in 1994-97 in the North Atlantic Assembly. In 2002 he was named Minister of Foreign Affairs of the Netherlands. As head of the Dutch foreign policy agency, in 2003 he became the chairman of the Organization for Security and Cooperation in Europe (OSCE). In September 2003 de Hoop Scheffer was elected NATO Secretary General.

Ivanov, Sergei Borisovich, First Deputy Chairman of the Russian Federation Government. Born in 1953. In 1975 graduated from the interpreting department of the Leningrad State University Philological Faculty specializing in English and was invited to work in the state security organs; in 1977, graduated from higher courses of the USSR KGB. In 1981-88 he advanced from superintendent in the USSR KGB First Main Directorate to first deputy chief of a directorate of the Russian Federation Foreign Intelligence Service. He had three lengthy tours of duty abroad to Scandinavian countries and Africa. In 1998-99, he was deputy leader of the Russian Federation FSB [Federal Security Service] Analysis, Forecasting, and Strategic Planning Department. In 1999, appointed Secretary of the Russian Federation Security Council and in 2001 he was appointed RF Minister of Defense. On February 16, 2007 he was appointed the First Deputy Chairman of the Russian Federation Government.

Khlopkov, Anton Viktorovich – PIR Center Executive Director. Born in 1978. In 2001 awarded a Master's degree at the Moscow Engineering Physics Institute (MEPhI). In 2001-02, member of the working group on nonproliferation and export control of the consortium Strengthening the Global Partnership. He is a member of the Institute of International and Strategic Studies (IISS, London) and a member of the Multilateral Study Group on the Establishment of a Ballistic Missile Free Zone in the Middle East/Persian Gulf. Coauthor of the monographs: *Nuclear Nonproliferation in Russian-American Relations: History, Opportunities and Outlook (2000), Cooperation for Global Security (2002); author of the monograph Iran's Nuclear Program in Russian-American Relations (2001)*. His research interest focuses on the regional aspects of nuclear nonproliferation and nuclear energy development. He is a member of the *Security Index* editorial board, and has extensive lecturing experience. He has taught at Russia's top universities, including the Moscow State Institute of International Affairs, Tomsk Polytechnic University, and Nizhni Novgorod State University. Email address: *khlopkov@pircenter.org*

Kiriyenko, Sergei Vladilenovich, Head of the Federal Atomic Energy Agency of the Russian Federation. Born in 1962. After graduation from high school, Kiriyenko enrolled in the shipbuilding faculty at the Nizhny Novgorod (Gorky) Water Transport Engineers Institute. He served as the Prime Minister of Russia from 23 March to 23 August 1998. In 1999 he was elected Russian State Duma. In 2000-05 worked as Presidential Plenipotentiary in Volga Federal District. In 2005 he was appointed to head Rosatom, the Federal Atomic Energy Agency of Russia.

Krasnov, Alexei Borisovich, Head of the Federal Space Agency's Manned Programs Department. He is a corresponding member of the K. E. Tsiolkovsky Academy of Cosmonautics, executive secretary of the Space Committee of the Commission on Economic and Technological Cooperation with the United States. Born in 1959, he graduated from the Electronic Engineering Department of the Moscow Energy Institute with a degree in as an electronic engineer. In 1982 he began working as an engineer for the All-Union Center for Information Problems, and in 1986-1988 he was an engineer at the Mashpriborintorg Foreign Trade Association. In 1987 he graduated from the USSR Ministry of Foreign Trade's Academy of Foreign Trade Advanced Training Department. In 1988-92 he served as third secretary in the Soviet, and then Russian, embassy to the United States, responsible for scientific and technical cooperation in the area of space, among other areas. In 1992 he began working at the Russian Space Agency as a head specialist in the International Division, and in 1993-04 he served as deputy head of the International Cooperation Department. In 1993-00 he was executive secretary of the Space Committee of the Gore Commission for U.S.-Russian Economic and Technological Cooperation, while in 1993-94 he led talks with NASA on the Mir-Shuttle Program. Beginning in 1994, he headed negotations on a Memorandum of Understanding with NASA on the creation of the ISS and was deputy head of the official Russian delegation to the talks on an Intergovernmental Agreement on the ISS. Since 2002 he has been a member of the official Russian delegation involved in multilateral export control mechanisms.

Lavrov, Sergey Viktorovich, Minister of Foreign Affairs of the Russian Federation, Ambassador Extraordinary and Plenipotentiary. Born in 1950. Graduated from the Moscow State Institute of International Relations of the MFA of the USSR in 1972. Began his activity in 1972 at the USSR Embassy in Sri Lanka. Worked in the Department of International Organizations of the MFA of the USSR between 1976 and 1981. From 1981 to 1988 – First Secretary, Councilor and Second Councilor at the Permanent Representation of the USSR to the United Nations. From 1988 to 1990 – deputy head of the Department of International Economic Relations of the MFA of Russia. In 1990-1992 – director of the Department of International Organizations and Global Problems of the MFA of Russia. In 1992-1994 – Deputy Minister of Foreign Affairs of the Russian Federation. From 1994 – Permanent Representative of the Russian Federation to the United Nations. On March 9, 2004 he was appointed the Minister of Foreign Affairs of the Russian Federation. Decorated with state awards.

Loschinin, Valery Vasilievich, Ambassador Extraordinary and Plenipotentiary, Permanent Representative of the Russian Federation to the United Nations Office and other International Organizations in Geneva as well as to the Conference on Disarmament. Born in 1940. In 1964 graduated from the Belarus State University (Minsk) and in 1977 – from the Diplomatic Academy of the Ministry of Foreign Affairs of the USSR (Moscow). Began his diplomatic career in 1965 at the Ministry of Foreign Affairs of Byelorussia; since 1977 has been working at the Ministry of Foreign Affairs of the USSR. In 1989-95 he served as Deputy Permanent Representative of the USSR / Russia to the International Organizations in Geneva. In 1995-96 served as Director of the 2nd European Department, Ministry of Foreign Affairs of the Russian Federation. In 1996 became Ambassador of the Russian Federation to Belarus. In 1999-01 he was a Permanent Representative of the Russian Federation to the International Organizations in Vienna, Austria. In 2001-02 he was Deputy Minister of Foreign Affairs of the Russian Federation and in 2002was appointed as the First Deputy Minister of Foreign Affairs of the Russian Federation. Since 23 January 2006 – Permanent Representative of the Russian Federation to the United Nations Office and other International Organizations in Geneva as well as to the Conference on Disarmament.

Novikov, Mikhail Yuryevich, Deputy Director of the Branch Laboratory on Nuclear Export Controls at the All-Russian Research Institute of Technical Physics (VNIITF) in Snezhinsk. Born in 1960, Novikov graduated from the History Department of Urals State University as a historian/archivist. He has worked at VNIITF, Snezhinsk (formerly VNIIP of the Soviet Medium Machine Building Ministry, Chelyabinsk-70) since 1984. His academic interests include nuclear nonproliferation, export controls, nonproliferation education, and the history of the Soviet "nuclear project." He is the author of several chapters in educational textbooks on nuclear export controls, and participated in the creation of several reference manuals on

nuclear export controls. He has taught in branch institutes of higher education and lectured for specialists in Rosatom enterprises and organizations. Email address: *mnov-2006@yandex.ru*

Obukhov, Alexey Alexandrovich, Ambassador Extraordinary and Plenipotentiary, ambassador-at-large of Ministry of Foreign Affairs of the Russian Federation, Chairman of the Russian Delegation to the Joint Russian-Lithuanian Commission on demarcation. Born in 1937. In 1961 graduated from Moscow State Institute of International Relations and in 1965 received a PhD in the same institute. Since 1966, Dr. Obukhov has served in the Ministry of Foreign Affairs of the USSR/the Russian Federation. In 1969-91 took part in the U.S.-Soviet negotiations on strategic arms. In 1987 was a Deputy Chairman on nuclear space weapons. In 1989-92 he was Deputy Minister of Foreign Affairs, in 1992-96 he was Ambassador of Russia to Denmark. Email address: *moscowsuper@mtu-net.ru*

Orlov, Vladimir Andreevich, the founder and President of the PIR Center - *Center for Policy Studies (Russia)*, Editor-in-Chief of the *Security Index* Journal, and Co-Director of the European Training Course in Security Policy at the *Geneva Centre for Security Policy* (GCSP). He is the President of the *Centre russe d'études politiques, Genève*. Dr. Orlov is a member of the Public Board at the Ministry of Defense of the Russian Federation. He is the Chairman of the *Trialogue* Club. Vladimir A. Orlov was born in 1968 in Moscow, Russia. He graduated from the Russian Foreign Ministry's Moscow State Institute of International Affairs (MGIMO). In 2001-02 he served as a U.N. consultant on disarmament and nonproliferation education by the appointment of the U.N. Secretary General. Dr. Orlov regularly publishes his views in Russian and foreign periodicals and has edited more than a dozen books on international security issues, published both in Russia and abroad. Dr. Orlov continues to teach on a regular basis, giving lectures on Russian foreign policy and WMD nonproliferation. Email address: *orlov@pircenter.org*

Ponomarev-Stepnoi, Nikolai Nikolaevich, Vice-President of Russian Research Center *Kurchatov Institute*, Academician, PIR Center Advisory Board Member. Doctor of Technical Science, Professor, nuclear physicist, a leading world specialist in nuclear power units. Born in 1928. In 1952 graduated from Moscow Institute of Engineering Physics. Since 1952 works in Russian Research Center *Kurchatov Institute*. Editor-in-chief of the journal *Atomnaya Energiya*. Member of the editorial board of the journal *Nuclear Science and Engineering*. Chairman of the research council for atomic energy of the Russian Academy of Sciences. Member of the research council of the RF Ministry of Atomic Energy.

Sargsyan, Gagik, researcher at Geneva Centre for Security Policy. Born in 1982, in 2004 he obtained BA degree in Political Science from Sorbonne University (Paris-1-Panthйon) and MA degree in International History and Politics from Geneva Graduate Institute of International Studies in 2006. In 2006 joined Geneva Centre for Security Policy. Accepted for a Phd in Political Science, University of Ottawa, Canada, starting date fall 2007. His research interests are Russia and former USSR states, Caucasus history and historiography, Migration, Diaspora, ethnic conflicts and nationalism. Email address: *gagik_sargsyan@yahoo.com*

Sobolev, Valentin Alekseevich, Colonel-General, Acting Secretary of the Security Council of the Russian Federation. Born in 1947. In 1969 graduated from Moscow construction engineering institute and in 1974 from High school of the Committee of the State Security. From 1972 to 1999 served in Government. In 1994-1999 worked as Deputy, First Deputy of Director of FSB – Federal Security Service of Russia. From 1999 – Deputy Secretary of the National Security Council of the Russian Federation. In July 2007 was appointed as Temporary acting Secretary of the Security Council of the Russian Federation. Member of the Academy for Security, Defense and Law enforcement problems, Professor. Awarded State orders

Timerbaev, Roland Mikhailovich, PIR Center Executive Board Chairman, Ambassador Extraordinary and Plenipotentiary. Born in 1927. He is a Russian leading expert in the sphere of nonproliferation and arms control, is world-renowned as one of the authors of the Nuclear Non-Proliferation Treaty (NPT) – the cornerstone of the nonproliferation regime. After graduating from the Moscow State Institute of International Relations (MGIMO) in 1949, Roland Timerbaev dedicated over 40 years to the diplomatic service, first in the Soviet Foreign Ministry and then the Russian Foreign Ministry, retiring in 1992 from the post of Permanent

Representative of the Soviet and Russian Missions to International Organizations in Vienna. He actively participated in drafting several key international agreements in the nuclear sphere, including the Anti-Ballistic Missile Treaty, the U.S.-Soviet Agreement on Measures to Reduce the Nuclear War Threat, the IAEA safeguards system, the Threshold Test Ban Treaty, and the Peaceful Nuclear Explosion Treaty. In 1974-1978 he participated in the work to establish the Nuclear Suppliers Group. He has also taken part in six NPT Review Conferences. Professor Timerbaev has a doctorate in history, and has broad academic and teaching experience both at leading Russian institutions (Moscow State Institute of International Relations, Moscow Engineering and Physics Institute) and abroad (in particular, at the Monterey Institute of International Studies). His works include *The Peaceful Atom in the International Arena* (1969), *Verification of Arms Control and Disarmament* (1983), *The Complete Prohibition of Nuclear Tests* (1986), *Russia and Nuclear Nonproliferation*, 1945-1968 (1999), *International Monitoring of Atomic Energy* (2003), and *The Current Status of the Nuclear Nonproliferation Regime and its Prospects: Towards the Upcoming 2005 NPT Review Conference* (2004). Email address: *timerbaev@pircenter.org*

Torkunov, Anatoly Vasilyevich, Rector of the Moscow State Institute of International Relations (MGIMO-University) of the Ministry of Foreign Affairs of the Russian federation, Ambassador Extraordinary and Plenipotentiary, Doctor of Political Sciences, Professor, Corresponding Member of Russian Academy of Sciences. Born in 1950. In 1972 received degree in political science, Moscow State Institute of International Relations (now MGIMO-Univ.) under the Ministry of Foreign Affairs of the USSR. In 1972-73 took diplomatic work at the USSR Embassy in People's Democratic Republic of Korea In1974-80 – assistant rector and dean for work with foreign students, Moscow State Institute of International Relations (MGIMO); in 1981-83, pro-rector for international liaisons, same institute. From 1983 till 1986 chargedd as first secretary of the USSR Embassy in the United States. In 1986-19992 – consecutively, senior researcher, then dean of Faculty of International Relations and first pro-rector, Moscow State Institute of International Relations. Since 1992 Dr. Torkunov is of rector, MGIMO-Univ.; editorial board member of journals "Mezhdunarodnaya Zhizn" (International Life), "Moskovsky Zhurnal Mezhdunarodnogo Prava" (Moscow Journal of International Law), "Global Governance", US; member of National Committee on UNESCO Affairs. Also member of different organizations: Attestation Collegium of the Ministry of Higher Education; Collegium, Ministry of Foreign Affairs; Russian Academy of Natural Sciences; Academy of Social Sciences; Academy of Military Science; International Academy of Higher Education. Chairman of.Russian UN Association (since 1998); president of Russian International Studies Association (since 1999) and Russian UN Association.

Trenin, Dmitri Vitalevich, chairman of the Carnegie Moscow Center Research Council and a senior associate at the Carnegie Endowment for International Peace (Washington). He was born in 1955 in Moscow. He served in the armed forces from 1972 to 1993, and graduated from the Soviet Ministry of Defense Military Institute in 1977. He did his military service both in Moscow and abroad, including as a member of the group of military experts in Iraq (1975-76), in the division of external relations of the Group of Soviet Forces in Germany (1978-83), and in the U.S.-Soviet negotiations on nuclear and space weapons in Geneva (1985-91). In 1993, he became the first Russian officer to receive a Fellowship at the NATO Defense College in Rome. He has taught at the Military Institute (1983-93) and Brussels University (1993-94); has given classes at Moscow State University, Stanford University (United States), and the Institute for Advanced Studies in Lucca (Italy). In 1993-97 he was a senior research associate at the Russian Academy of Sciences' Institute of Europe. Since 1994 he has worked at the Carnegie Moscow Center. Trenin is the author of more than 10 books, published in Russia, the United States, and western Europe. They include: *Integration and Identity: Russia as a New West* (2006), *The South's Time: Russia in Chechnya, Chechnya in Russia* (coauthor, 2004), *The End of Eurasia: Russia between Geopolitics and Globalization* (2001), *Russia's China Problem* (1998), and *The Baltic Chance* (1997). Books Trenin has edited include: *The Russian Military: Power and Politics* (2005), *Russia and the Main European Security Institutions: Entering the 21st Century* (2000); and *Kosovo: The Crisis' International Aspects* (1999). Trenin's articles have been published in leading Russian newspapers and journals, as well as abroad. He is a member of the International Institute for Strategic Studies (London), Russian Association for International Research, the consultative committee for the journal *Pro et Contra*, the editorial

board of the journal *International Politics*, and the PIR Center Research Council. Email address: *dmitri@carnegie.ru*

Tsygichko, Vitali Nikolaevich, doctor of technical sciences, professor, full member of the Russian Academy of Natural Sciences, senior research associate at the Russian Academy of Sciences' Institute of Systems Analysis. Born in 1933, in 1961 he graduated from the Dzerzhinsky Military Academy, and in 1966 he defended his candidate's dissertation. He worked in the central scientific research institute of the Soviet Ministry of Defense from 1967. In 1976 he defended his doctoral dissertation. Tsygichko holds the rank of colonel, retired. In 1985-88 he worked in the Russian Academy of Sciences' Institute of Systems Analysis, and in 1988-91 headed the independent Center for Research on National Security Problems. He worked at the Massachusetts Institute of Technology (USA) in 1992-93, heading the international program Supporting Decisions in the Area of International Security and Strategic Stability. From 1995-2001 he served as an expert for the International Affairs Committee of the Russian Federation Council. At present he is an expert on information security for the Russian Foreign Ministry. His academic interests include methodological approaches to mathematical modeling of socioeconomic processes, decision-making theory, applied systems analysis of theories and methods of socioeconomic forecasting, national security and strategic stability issues, information security, and geopolitics. He is the author of six monographs and over 200 articles. Email address: *vtsygichko@inbox.ru*

Zrodnikov, Anatoly Vasilievich, Director General of the State Scientific Center of the Russian Federation Institute for Physics and Power Engineering (IPPE) in Obninsk, Russia. Born in 1944, Anatoly Zrodnikov joined the IPPE in 1969 after graduation from the Moscow Power Engineering Institute (Technical University) with M.S. in Applied Physics and served in various positions. The fields of his scientific interest are nuclear power, including space applications, fast neutron reactors, nuclear pumped lasers, plasma physics, perturbation theory. Prof. Zrodnikov is the President of the Russian Nuclear Society, a member of the Editorial Boards of journals Laser and Particle Beams, Cambridge University Press, and Atomic Energy, Moscow.

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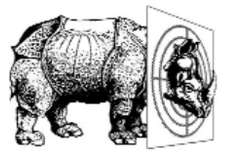


ON THE PROPERTIES OF INTELLECT

Ce n'est pas tant la fertilité de l'esprit qui nous fait trouver plusieurs expédients sur une même affaire, que c'est le defaut de lumière qui nous fait arrêter a tout ce qui se presente a notre imagination, et qui nous empêche de discerner d'abord ce qui est le meilleur.

Francois de La Rochefoucauld
Réflexions ou sentences et maximes morales

It is not so much the fertility of our imagination that lets us find many ways to conduct the same affair, but rather the lack of certainty that makes us stop before every expedient and prevents us from discovering which choice is best.

Francois de La Rochefoucauld
Reflections; or Sentences and Moral Maxims

FINAL QUOTES

THREE CROSS-CUTTING ISSUES: DISARMAMENT, NUCLEAR ENERGY, AND CHINA

I would like to begin with some words of appreciation. I would like to thank our readers who sent the editorial staff their congratulations on the occasion of the publication of the first issue of *Security Index*. Several of these welcome letters and addresses are reprinted at the end of this issue.

We marked the publication of the journal with two presentations that were both vivid and well attended. The first took place in Moscow and was dedicated to the Russian-language publication. One month later a presentation occurred in Geneva, which the PIR Center conducted together with Centre russe d'études politiques and the Permanent Mission of Russia to International Organizations, where we celebrated the international publication of *Security Index* (in English). I was so very pleased to greet so many friends and partners of the PIR Center during these two evenings in two different cities!

No less important to me were the letters from readers who moved from congratulating us to providing specific proposals on how we could be sure not to drop the plan that we raised so highly in our first issue. The editorial board is discussing all of the interesting proposals and ideas, and will soon begin to realize some of them in upcoming issues. I am counting on the future flow of ideas from our readers continuing to be as rousing.

I am also glad to note that serious support to the development of the journal and its distribution in Russia and abroad is being provided by the journal's regional representatives: from Vienna to Vladivostok, from Delhi to Baku, from Tokyo to Wellington, and from Kiev to Algiers. Sometimes it is hard for me, as well as for other editorial board members, to *reach out* to our readers in various corners of Russia and the world, to listen closely to their preferences as well as to obtain materials for the journal from these far-flung locations. Here the assistance of the journal's representatives could not be more important.

And now, about the issue that you hold in your hands. As the journal's mission calls for, it is diverse and has multiple styles. There is a very practical conversation about manned space flight (an interview with **Alexei Krasnov**), and a question about further NATO expansion (an interview with **Jaap de Hoop Scheffer**)...

But I nevertheless would like to point to three cross-cutting issues that dominate the issue—not without editorial design.

The first is **disarmament**—a term that seemed to disappear from the political lexicon over the course of the last decade. The problems of arms control and disarmament, both bilateral and multilateral, have gradually been pushed into the background.

"The rapid speed of improvements in military technology, the swift adoption of these new technologies by the armed forces of many states and, as a result, the amendment of military doctrines to envision the use of military force to combat new threats and geopolitical

challenges have all taken the global community unawares. As a result of this already fairly protracted period of confusion, the international legal underpinnings of arms control—which took decades to form—has begun to grow antiquated. In many ways it no longer meets current needs," writes PIR Center senior advisor Lieutenant General **Gennady Evstafiev**. Disarmament policy is in crisis, he avers. But it is necessary to return to it given the present circumstances? We must, the author is convinced, and then proceeds to present in detail the new, complex agenda of bilateral and multilateral arms control measures that must be undertaken soon. His palette is purposefully broad: from the reduction of strategic nuclear weapons and speeding up the entry into force of the Comprehensive Nuclear Test Ban Treaty (CTBT), to averting of the development of an arms race in space. But the author cannot but recognize that *returning* disarmament to the global agenda will be very difficult and that there is a very high risk of a new arms race.

I would like to note that the electronic version of this article, which was posted on the PIR Center website even before the printed version was published, led to a flood of commentaries both from Russian and from foreign readers and experts, and the section "Is the CFE Needed"—written as it was by one of the drafters of that agreement—is particularly topical today.

The CTBT's direct predecessors were the "threshold" test ban treaties, negotiated in 1975-76. Ambassador Extraordinary and Plenipotentiary **Roland Timerbaev** was part of the Soviet delegation that negotiated these treaties, which limited the yield of underground nuclear explosions, conducted either for weapons testing or for peaceful purposes. Both the U.S. and Soviet delegations took seriously the need to limit nuclear tests, and undertook the complicated task of developing a detailed, though complex, system for monitoring and inspection which served the cause of disarmament well for many years.

This cause has been taken up by many brilliant individuals, not least of them Academician Lev P. Feoktistov, one of the most important Soviet and Russian nuclear scientists, who later became a supporter of complete nuclear disarmament. **Mikhail Novikov** reviews a new book devoted to his life, that includes both autobiography and recollections of the man by those who knew him. The other book review in this issue looks to the future of nonproliferation and disarmament: in my examination of the monograph *Nuclear Weapons After the Cold War,* I review the new proposals by Russian experts Vladimir Dvorkin and Alexei Arbatov to move policy forward in this area.

The flip-side of disarmament is the question of why nations take up nuclear weapons in the first place. While most typically examined through analyses of the international system and rational state actions, the choice to develop these weapons also has a clear, ethical dimension. This dimension—and the relationship of religious morality to the question of nuclear weapons' development—is examined by Ambassador **Alexei Obukhov,** a man who devoted many years of his life to arms control negotiations, defending *our good* nuclear weapons from *their bad* weapons, who has clearly earned the right to conclude, "defending nuclear weapons is a terrible sin!" On the other hand, states need conventional weapons to defend themselves, particularly in regions with an unpredictable future.

The second cross-cutting topic in this issue is **nuclear energy**. The idea that we are now on the threshold of a global nuclear renaissance has already become commonplace. But how can the expected rapid expansion of nuclear power in certain regions be combined with ensuring international security? How can we learn to build *cooperative nuclear relations*? PIR Center Scheffer Director **Anton Khlopkov** reflects on these questions in his evaluation of what the conclusion of an intergovernmental nuclear agreement with the United States will mean for Russia and its nuclear industry. How realistic it is to expect the entry of such an agreement into force in the foreseeable future, given the current rigidity of the U.S. Congress, is another question.

Further, Nuclear Threat Initiative (NTI) Vice President **Laura Holgate** provides the outlines of the idea for the establishment of an international reserve of nuclear materials, originally proposed by NTI and now under consideration at the IAEA. Whatever the prospects for the practical realization of this proposal prove to be, posing the question of international assurances for

the delivery of nuclear fuel to those states that voluntarily forego the creation of their own nuclear fuel cycle, and thus prove potentially vulnerable to external pressure, is legitimate and long overdue.

A third important topic debated in this issue: **Sino-Russian strategic relations and their prospects**. This is a question that is being asked by all analysts of Russian foreign policy and defense priorities, though sometimes it seems that there are those who *shy away* from making their views known. But I have asked the authors in this issue to depart from diplomatic neutrality. **Vitali Tsygichko,** co-author of our series of duelling viewpoints notes: "I say without reservation: in my view, the openly hegemonic direction that Chinese foreign policy has taken poses a direct threat—or, to be more precise, an entire collection of threats and challenges—to Russian interests in the Asia-Pacific region." But **Dmitri Trenin** is in decisive disagreement with this conclusion: "China is not going to be like the Soviet Union or Japan of the 1930s. Its expansion will not be predominantly territorial in nature, and basically will not be achieved by military means. The Chinese *divisions* will be transnational corporations with their headquarters in Shanghai, Beijing, Shenzhen, and so forth. PRC military aggression against Russia is extremely improbable in the foreseeable future (let us say, 15-20 years)." Who won in this dispute? Whose arguments are more convincing? Visit the PIR Center website and vote, provide your own assessment.

Another argument is conducted on the journal's pages by two of our regular reviewers, **Dmitry Evstafiev** and **Yury Fedorov**. As you remember from the previous issue, we conditionally dubbed the former a "Russian conservative," and the latter a "Russian liberal." I must say that the authors themselves do not agree with these labels—or, if not labels, then at least one might call them simplifications—coined by the editorial staff.

It could be that they are correct. But which one of them is more right (further to the right?) in his appraisal of the course of events in recent months, is nevertheless the key issue. In this issue Dmitry Evstafiev writes that one should pay attention to the imminent shift of technological eras (and warns that Russia is risking that it will sleep through it). Meanwhile, Yury Fedorov, searching for answers to present challenges, cites Bismarck: "The great questions of the day will not be decided by speeches or by majority decisions... but by blood and iron!"

Graeme P. Herd and **Gagik Sargsyan** examine Russia's demographic crisis, and how the uneven population decline may pose threats in the political, economic, societal, and military sphere. It is not too late for Russia to influence current trends, in particular by encouraging immigration, but this would require a far greater policy change than we have seen to date.

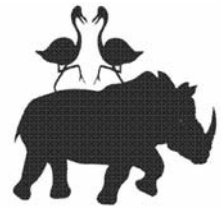
The articles in this issue contain a large number of unsolved problems and accumulated contradictions... however, after several alarming drops in *iSi*, our measurement of the global security index—drops which indicate an increase in global tension—in April and May we did not just see it stabilize, but even a slight rise, making it possible to say that the international situation, although extremely unstable, was nevertheless far from catastrophe. However, the future holds both promise and dangers, and for Russia in particular, a new danger on the horizon is depopulation.

I began by talking about how the journal is developing. I will conclude by talking about this too.

First, subscriptions to *Security Index* for 2008 are now being accepted. Certainly, we are glad that we have been able to provide our journal during its first year of publication under a new name to many of our readers free of charge. But this situation will change in the new year: the journal will once again be distributed via paid subscription. The Russian edition can be subscribed to through the Rospechat catalog, while the international edition can be obtained by becoming a member of the *Centre russe d'études politiques*—the PIR Center's European branch in Geneva—or by joining the *Trialogue Club*. Information on how to do this is provided with the journal.

Second, the wish expressed by many of our readers that we return to a quarterly publication cycle have been heard by the editorial staff. Beginning in 2008, Security Index will come out—in Russian and in English—four times each year!

Vladimir Orlov



Jaap de Hoop Scheffer

"NATO IS NOT LAUNDRY DETERGENT; NATO IS A UNIQUE POLITICAL AND MILITARY ORGANIZATION"

Security Index ***editorial board member Konstantin Eggert interviews Jaap de Hoop Scheffer, the NATO Secretary General***[1]

SECURITY INDEX: Only a year ago many people suggested that at the Riga summit NATO would take its relationship with the three Balkan states, Albania, Macedonia, and Croatia, as well as possibly Ukraine and Georgia, much further ahead, probably even offering MAP's to these countries. Now this will not happen. Do you feel a sense of disenchantment?

de HOOP SCHEFFER: No, I do not, because I think that NATO has been consistent in the run-up to the Riga summit. You know that the whole discussion preceding the summit has been debating the transformation of NATO: the legal transformation, the military transformation. You'll certainly see that the nations in the Western Balkans you mentioned will see an encouraging, positive signal of confirmation that NATO's door is open, you'll certainly see in the Riga communiqué that Ukraine and Georgia are mentioned as both nations are having so-called "intensive dialogue." But it has never been the intention of NATO to consider the Riga summit as an enlargement summit. From the beginning it was clear that this was not going to be the case.

SECURITY INDEX: Some observers already claimed that this reluctance to take any kind of demonstrative steps towards Ukraine and Georgia is because some of the leading members of NATO do not want, at the current time, to spoil relations with Moscow, which will be irritated. What would you say to that?

de HOOP SCHEFFER: My answer will be that I don't agree with those observers because I think that NATO enlargement has always been a discussion of performance, discussion of the inspiration of nations wanting to become NATO members, or NATO partners for that matter. And that has always been an autonomous process. That does not mean that there is no discussion of these topics in the NATO-Russian Council, which will celebrate its fifth anniversary this year. We have discussed, for instance—that was before the Russian-Georgian spat, by the way—we have discussed Georgia. Georgia maps out its own future. The Alliance follows that process. Georgia's in intensive dialogue, so is Ukraine. The whole process is performance-based, but I think that those observers are not right if they say that there's direct link. As I said when I was in Moscow speaking to President Putin, speaking to Defense Minister Sergey Ivanov as well, we have a very important partnership with Russia. We should invest in that partnership and that is not, as you know, the 26 plus 1 partnership, NATO and Russia, that is a 27 partnership, which is a basic difference with other partnerships NATO has.

SECURITY INDEX: You mentioned in Riga, speaking at the Riga Conference, that the next NATO summit will take place in about a year and a half, in spring 2008. What are the chances of the three Balkan states as well as Georgia and Ukraine of getting MAP, of moving significantly forward towards membership in 2008?

de HOOP SCHEFFER: My expectation is that NATO will have a summit in the first half of 2008, spring. I do not know is my answer, and that is not because I want to be defensive, I simply do not know. I get this question also from the nations concerned, of course many times. My answer always is: this is a performance-based process. NATO has of course its criteria, its benchmarks, its gauges. And the Intensive Dialogue is one of the phases. I can not possibly say what will happen in 2008, if one or another will be ready for NATO membership, if a one or another will be ready for the MAP. I simply do not know, because if I knew now, I would depart from the basic performance-based principle.

SECURITY INDEX: Many people point out the fact that this kind of massive support of Georgian public opinion for NATO membership influences Georgian chances in a kind of positive way, while the split in Ukrainian public opinion has a kind of negative impact on future chances. Is this so? Is the role of public opinion really so important?

de HOOP SCHEFFER: In the end, the people decide where they want to go. Governments can inspire, governments can provide direction, but in any democracy it's the people who decide in the end. I do know, and you know, that when you look at public opinion in Ukraine for NATO membership, that is still a challenge. And if you ask me a challenge for whom…it is a challenge for Ukraine.

Ukraine is in Intensive Dialogue, we have a distinctive partnership with Ukraine, we'll go on supporting Ukraine whatever and whenever they ask. I will explain NATO in Ukraine, what NATO is, like I do in Russia. I don't sell NATO, NATO is not laundry detergent, NATO is a unique political and military organization.

SECURITY INDEX: You have mentioned the fifth anniversary of the NATO-Russian Council in 2007. And you mentioned in your speech that you wanted to see Russia as a privileged and important partner. However, many people in Moscow, myself included, feel that the relationship is rather.. if not in crisis then in a kind of blind alley. What do you feel about that?

de HOOP SCHEFFER: It's certainly neither in crisis nor in a blind alley. But what I do feel, and as you say, in the next year we'll celebrate five years of the NATO-Russia Council, as well as ten years since the Founding Act—we'll have a double anniversary, in fact. I think, as I said in my speech, this relationship needs investment. If you don't invest in the company, as we know, if you don't go on investing, the results will be less than you expect. What should we do? And if I say "we," I specifically mean NATO and Russia and this relationship we should both invest in. Invest in practical cooperation, our political cooperation, not shy away from the subjects we do not agree upon.

These include Georgia, where there is a spat with the Russian Federation. My message is to both: to Russia, the time has come to abandon the measures against Georgia and the Georgians; to Georgia, it's important that the debate, as far as the tone and the level of the debate is concerned, that the volume be decreased. I see that has been happening over the past weeks.

Coming back to investment in the NATO-Russian relationship, investment from the NATO side, investment from the Russian side… It's a relationship between adults. The Russian Federation is very much adult, the NATO organization is adult. The Russian Federation is a member of the P5, is a permanent member of the UN Security Council. So Russian cooperation in necessary for the resolution of many conflicts in the world: nonproliferation, North Korea, Iran, the Middle East, Kosovo. Both partners have invested in this relationship, and that is the way we should go forward.

SECURITY INDEX: Many people said that NATO would have to have an energy security policy. And Russia is mentioned specifically: its efforts to use energy as a kind of political tool. Aren't you afraid this could become a basis for an anti-Russian policy in NATO?

de HOOP SCHEFFER: Definitely not. Not because when I mention energy security policy in relationship to NATO the line I always follow is that NATO should define the terms. And you will not hear me mentioning energy security in direct relationship to Russia or Russian policy. I mean, NATO is not the European Union, NATO is not an energy agency, NATO is NATO, a political-military organization, which in its strategic concept has a reference to a free flow of energy. And if you see a reference to energy security in the Riga Communiqué, it has nothing to do with the NATO-Russian partnership, it has everything to do with finding NATO's added value.

And if I speak about added value, let me repeat in front of your microphone the example I have given. I could imagine NATO and partners like Russia participating ... in the Mediterranean exercises with NATO warships. NATO and its partners could look into protection of sea lanes along which natural gas or oil is transported. It's about NATO's added value and I would certainly not qualify any reference in the NATO Communiqué to energy security as being a threat to Russia, not at all.

SECURITY INDEX: In relation to the Russian-Belarusian energy crisis in the beginning 0f 2007, what specifically could NATO do to address the issue of energy security?

de HOOP SCHEFFER: The gaz dispute and crisis between Russia and Belarus was, and remains, a bilateral matter. Thankfully, it was resolved rapidly through negotiations conducted between Moscow and Minsk.

However, the dispute reminded all of us, producing, consuming and transit countries alike, of our dependency upon uninterrupted and reliable flows of energy. At the Riga Summit in November last year, NATO articulated its support for a coordinated international approach to determining the most important risks to energy infrastructures and to promoting their security. This decision at Riga was fully consistent with NATO's Strategic Concept in which the Allies recognise that the increasingly global dimensions of security and stability necessitated the monitoring and assessment of, *inter alia*, the disruption of the flow of vital resources.

What NATO has agreed to do, as a first step, is to engage in consultation among the Allies on energy security issues and establish where NATO could best add value to safeguard the security interests of the Allies and, upon request, to assist national and international efforts. We have consulted with Russia as well as on how best to ensure the security of critical energy infrastructure. These consultations will enable us to identify possible specific measures that could be taken in this important area.

SECURITY INDEX: Discussion about the NATO operation in Afghanistan took up a lot of time at the Riga Summit. Not all countries want to contribute enough troops and send them in the line of fire. Does it mean that tensions in the Alliance jeopardize the outcome of the Afghan operation? Wasn't it too soon that NATO went "out of area"?

de HOOP SCHEFFER: NATO has 33 000 troops in the UN-mandated International Security Assistance Force (ISAF) in Afghanistan. These troops come from 37 nations (all 26 Allies and 11 non-NATO nations) and are deployed throughout the country and with the full support of a vast percentage of the population there. Allies are committed to provide *in extremis* support to each other, should the need arise. Our engagement there reflects the common recognition by NATO member nations and our ISAF partners that our security is intimately bound to the emergence of a sovereign, democratic and prosperous Afghanistan at peace. NATO is working for a comprehensive solution to challenges facing Afghanistan, including the need for reconstruction, development and strengthening democratic institutions. To this end, NATO cooperates closely with the Afghan government, as well as the UN, the EU, the World Bank and other key donors.

As for the question about going "out of area", I believe it is essential to understand that for all of us, geography and distance are no longer factors in enhancing our security, and that is why NATO had to go "out of area": quite simply, if we do not deal with the problems when and where they arise, those problems will end up on our own doorstep and be even more difficult to deal with.

SECURITY INDEX: In recent years there is an ongoing discussion about NATO playing a more active role in the Middle East - apart from the Mediterranean Dialogue, what could this role be?

de HOOP SCHEFFER: NATO has indeed an active dialogue and cooperation program with the countries from North Africa and the broader Middle East. Both Mediterranean Dialogue and the Istanbul Cooperation Initiative are important and useful tools to promote trust, confidence and mutual understanding as well as to engage in concrete cooperation on issues of common interest such as the fight against terrorism. Our Summit in Riga has clearly confirmed NATO's readiness to develop its ties with partners, including countries from this strategic region of the Middle East.

SECURITY INDEX: In 2002, targets were set for European alliance members to try and decrease the technological gap with the US. It seems not much progress has been made so far. Why? Is this technological divide now completely unbridgeable?

de HOOP SCHEFFER: I assume that the targets to which you refer are those activities set in train by Heads of State and Government at the Prague Summit in 2002, and which are known collectively as the Prague Capabilities Commitment (PCC). This package of measures was designed to improve Alliance defence capabilities in a number of key operational capability areas: creation of a rapid response force; Chemical, Biological Radiological and Nuclear defence; information superiority; combat effectiveness; and sustainability and deployability. Important progress has been made in all the identified areas and this was reflected in the announcements made at our last Summit in Riga, where the NATO Response Force, was declared fully operational.

SECURITY INDEX: What about NATO's policy in Central Asia? A Special Representative for the region has been appointed. What does he do, and does this tie up with the energy security issue?

de HOOP SCHEFFER: Central Asia is a strategically important region for the Alliance. NATO is interested in a stable and prosperous Central Asia, and ready to support the democratization process in the countries of the region, which is a key pre-requisite for ensuring long-term stability and prosperity. Central Asia is also extremely important for NATO in the context of NATO's contribution to the stabilization and reconstruction in Afghanistan. All five Central Asian Partner governments provide valuable support for the NATO-led ISAF operation and there is potential for further developing co-operation with the countries of the region in this respect.

Since the appointment of a Special Representative for Central Asia and the Caucasus following the 2004 Istanbul Summit, he has been working actively to enhance co-operation between the Alliance and all five Central Asian countries. NATO has established high-level working contacts with the leaders of the region and as a result, most of these countries have significantly intensified their co-operation with the Alliance. There is now even a positive development in the NATO-Uzbekistan dialogue which was suspended after the Andijan tragedy.

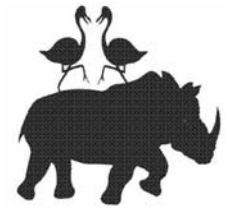
We are interested in further deepening our political dialogue with the Central Asian governments on regional security issues, including on the Caspian basin. We are also increasing our practical co-operation in areas such as civil emergency planning and disaster relief, crisis management, naval issues, and intelligence exchange. This practical cooperation will also contribute to the efforts of the international community to address the issue of energy security, in particular the protection of energy infrastructure, which is of great concern for Allies and Partners alike.

SECURITY INDEX: You have mentioned that in the year 2009, for the 60th anniversary of the NATO Alliance, you envisage a possibility of adopting a new NATO strategy for the coming century. Does it mean that the Washington Treaty of 1949 has to some extent become obsolete? How do you see the main points of this grand strategy today?

de HOOP SCHEFFER: The Washington Treaty is as alive as it has ever been since 1949. I'd also say that the Washington Treaty's Article 5 is the core of NATO, that's NATO's core business. What I say is not referring to the century, because that would be a bit much, I think. If I see NATO transforming, developing, the moment may have come to think about a new guiding document. Not the Washington Treaty, not Article 5, to avoid any misunderstanding. That would stay as it is. A guiding document, call it a strategic concept, call it anything you'd like to call it, for NATO's future. It's finally the alliance who decides if they want it or not. But it is certainly not the case that the basics of NATO will change. Let's not forget, finally, that at the Riga Summit NATO will adopt a document we call the Comprehensive Political Guides, that's NATO jargon for [a written document outlining] what we have seen as NATO developments over the past years, what we would like to see as NATO developments in the future. There's a whole transformation process. I think that at a certain stage, and I link it to the 60th anniversary of NATO in 2009, it might be a good idea to think about a new basic document, but certainly not about a new Washington Treaty, or Article 5. That's NATO's core business.

Notes

[1] Konstantin Eggert's conversation with Jaap de Hoop Scheffer took place on February 1, 2007.



Alexei Krasnov

MANNED SPACE FLIGHT HAS ALWAYS BEEN AN ARENA OF POLITICAL RIVALRY

Security Index *editor-in-chief Vladimir Orlov spoke with Alexei Krasnov, head of the Russian Space Agency's Manned Programs Directorate.*[1]

SECURITY INDEX: Alexei Borisovich, what are the government's main tasks in the area of space research at present, particularly those for which your directorate has responsibility—manned flight? Is international cooperation in this "sensitive" sphere progressing smoothly?

KRASNOV: Manned space flight has always been an arena of political competition, competing ambitions, and competition in the sphere of science and technology. It is not surprising that in the early stages of man's opening up of space, the United States and the Soviet Union were carried away by the competition in man's exploration of near-earth space.

In the near term (by 2015), the most important goal in space exploration will be the completion of the program to create, maintain, and use the International Space Station (ISS). The international partners in this program, as is well known, are the United States, Russia, European Space Agency partner states, Japan, and Canada. Solving the tasks that have been set requires all of the partners actively to fulfill their international commitments.

At the beginning of the process of creating the ISS, we, the Russians, were very optimistic, believing that we could build the station in five years. But certain unforeseeable problems arose that got in the way: on our side, there were delays in the construction of the first station components; later, the space programs of our U.S. colleagues stopped for three years due to the *Columbia* shuttle catastrophe.

Now we are switching to yet another modification of the station—already more than the twelfth—for which components are supposed to be finished in 2010. During this period our vision of what this station should look like has had to change. We realized that the composition of the Russian segment should be different. We reduced our "appetite" where the size of our segment was concerned and developed a program for the modernization of the module, in order to obtain the maximum amount of useful capacity for scientific programs.

At present, our ISS partners' plans are to operate the station through 2016. Originally, we assumed that the station would operate for 15 years, and 2016 really "marks" the end of 15 years of the existence of the service module that is the foundation of the orbital structure. In many respects the current assembly stage depends upon our colleagues, on shuttle flights. It is very possible that we will soon begin discussions on extending the service life of the station until 2020, at the very least.

As for technological exchange, I would like to say that the picture of cooperation on the ISS is not without problems at present. The worsening international situation of recent years and the threat of terrorism provoked the stiffening of U.S. legislation and many issues in the sphere of manned space flight are now considered to be military issues. This includes the space shuttle system—the system by which people are transported into orbit.

I would like to emphasize that any serious cooperation in space is unavoidably tied to the question of the observance of the regime controlling the transfer, proliferation, and use of technologies that can be used for the production of delivery vehicles for weapons of mass destruction (WMD). The nature of outer space exploration is dual-use, since research results can be used both in the military and in the civilian spheres.

International space cooperation will undoubtedly be developed, but only with the understanding that the means to deliver crews into orbit can also be used to deliver weapons into space. Communications satellites are of course a key component of C-3 systems (Command, Control, and Communications), without which it is impossible to imagine a modern theater of war. The GPS system and Russia's GLONASS system are first and foremost elements of national defense systems. The same can also be said of high-resolution meteorological surveys of the earth's surface. Therefore, international cooperation will be developed, but questions of the protection of sensitive information related to WMD delivery systems will always be on the agenda.

SECURITY INDEX: At the present time, what is Russia's role in the construction of the ISS?

KRASNOV: Russia's role in the implementation of the program is steadily growing. Russian *Soyuz* spacecraft may become the only remaining means to transfer crews to and from the ISS. This is due to the fact that the U.S. National Aeronautics and Space Administration (NASA) must ensure the inclusion of European and Japanese research modules in the composition of the ISS by 2010, as well as an increase in the number of permanent ISS crew from three to six people. After this, NASA plans to end shuttle operations. But a new American manned spaceship will not be created earlier than 2013-14.

Under this approach, *Progress* cargo ships—which deliver cargo to the station—will also take on an increased load. At present, negotiations are under way between the Russian Space Agency (Roskosmos) and NASA on the United States' possible acquisition of Russian services for the delivery of crews and cargo for the ISS program.

Russian responsibility is also growing due to the U.S. President George Bush initiative,[2] which will influence the fulfillment of existing agreements. This is, primarily, true in a purely material sense, since the initiative will require significant expenditures. These resources were in part found through the reduction of ongoing programs. Naturally, the ISS program was also affected, but the greatest influence over the execution of the program, I emphasize again, was made by the decision to terminate shuttle flights in 2010. We hope that over the long term, despite the exclusively national nature of the initiative, it will allow us to use the fairly in-depth experience of international cooperation within the framework of the ISS program.

SECURITY INDEX: How are the United States' partners in the project reacting to the developing situation? And how is Russian cooperation with project partners other than the United States?

KRASNOV: The European Space Agency (ESA) is concerned by the developing situation and has voiced serious interest in cooperating with Russia on the operation and targeted use of the ISS. For example, under the ISS program joint Russian-European designs have already been used to equip the *Zvezda* Russian service module with the European DMS-R data management system as well as integrate the Russian ISS segment with the European Automated Transfer Vehicle (ATV) cargo carrier and the European Robotic Arm (ERA).

In addition, intensive Russian-European consultations are currently under way on the possibility of the joint creation of a next-generation transport system to ensure the transport of crews and cargo to the ISS. It has been proposed that over the long term this system should ensure the implementation of programs for research and exploration of the moon, and later, possibly, Mars. The first stage in the creation of such a system could be the comprehensive modernization of the *Soyuz* and *Progress* spacecraft in order to undertake the tasks that have already been set. Europe is also interested in the possibility of operating the new system from the European launch site in Kourou (in French Guiana, South America).

The joint development of a next-generation transport system and its subsequent operation is a very complex matter for both parties, since it requires the thorough harmonization of technical, organizational, legislative, and other matters, as well as resolving the issue of the allocation of significant funding. At the same time, both parties must be clear on the tasks this system will

undertake, what requirements it must satisfy, and so forth. For this reason, a decision on joint development will not be made earlier than 2008.

Several joint Russian-European experiments are being conducted on the Russian segment of the ISS. Under an agreement with Roskosmos, during a visit to the Russian segment of the ISS by ESA astronauts, six European research programs, including over 100 experiments as well as the long-term flight of European astronaut Thomas Reiter as an expedition member counted under the Russian quota for ISS crew, were conducted.

At present, Roskosmos and ESA are working out joint programs in biomedical and physics research on the ISS as part of the ISS-15 though ISS-18 expeditions. The areas of research of greatest mutual interest have already been determined.

In addition to cooperation with ESA, Roskosmos and a number of Russian enterprises are cooperating directly with the European national space agencies and large private European corporations. As an example, one can point to the draft Russian-French research program and possible programs on space exploration, drawn up by Roskosmos and France's National Center for Space Studies (CNES).

The Russian segment of the ISS has also undertaken a number of experiments for the Japanese Aerospace Exploration Agency, as well as for a number of private Japanese companies. This primarily involved research connected with the cultivation of protein crystals, and taking videos with the aid of high definition television cameras.

SECURITY INDEX: We are basically talking about flights in near-earth space. But how about flights to other planets or, at least, to our nearest "neighbor," the moon?

KRASNOV: Interest in the study of the solar system and deep space, and in the prospect of manned missions to the moon and Mars in particular, heated up to a considerable degree after the statement by Bush at NASA headquarters on January 14, 2004, when he made public the new U.S. concept for the exploration of outer space. The plan, in particular, calls for manned lunar missions by 2020. The moon will be used as a base for manned flights to Mars, which are planned for some time after 2030. In the past three years, NASA has generally determined the architecture of space infrastructure for a lunar mission and the design of the Crew Exploration Vehicle (CEV), and begun its development.

The global community of space researchers is interested in these new plans. NASA has proposed to all interested parties that they determine their capabilities to participate in the implementation of this program. Moreover, here we are talking exclusively about a partnership, not about fulfilling U.S. contracts. One should take into consideration that NASA's budget exceeds the combined budget of other participants in space activities by several times; therefore, its international partners are justified in expressing fears that their potential partnership with NASA can not be on an equal basis. In fact, the United States has confirmed this, by openly stating its new space doctrine in 2006, already mentioned above, where it unequivocally declares the priorities of U.S. national interests in any space projects, as well as the U.S. intention to limit the access of "undesirable participants" to the space programs. For these reasons, its international partners are not yet hurrying to join the American initiatives.

SECURITY INDEX: So are Russia and other countries currently remaining on the sidelines in this sphere?

KRASNOV: Russia is proceeding from the fact that manned lunar missions and the creation of an inhabited lunar base could ensure the rise of the domestic rocket industry to the global technological level. Such flights will give Russia the chance to claim a leading position in international space cooperation, including in the area of ultradistant radar detection of asteroids and comets, in conducting unique astronomical and astrophysical observations outside the atmosphere, and in developing and using advanced technologies, including the full-scale development of promising space technologies.

Russian research on the planets (primarily the moon, Mars, and Venus) and small bodies of the solar system with the aid of unmanned spacecraft has been conducted since the 1960s. Important results have been obtained and unique experience and scientific and technical

knowledge accumulated in the creation of critical elements and systems for the research and exploration of the planets in the solar system. In the area of Russian manned space research, the priority is the creation of lasting manned orbital complexes and providing for prolonged (up to one-and-a-half year) human life and work during space flight. The accumulated capabilities are also of interest to our international partners.

Thus, the Europeans have expressed interest in cooperation with Russia under the European *Aurora* program aimed at exploring the solar system. Russia and Europe are in agreement that, first of all, ISS construction must be completed in the agreed-upon configuration to ensure the complete fulfilment of plans for research and experiments to get answers to many questions related to the further development of manned space flight, to work out particular technical solutions, and to confirm and demonstrate their operability. Furthermore, manned missions to the moon and Mars must be preceded by a fairly long period of research of these planets by unmanned systems from orbit and on the surface, in order to finalize (including in near earth orbit) the basic technical solutions and structural elements of space systems, as well as in order to select the optimum sites to land crews both from the point of view of safety and scientific worth. Russian and European experts are actively cooperating in the preparation of these robotic missions, which will precede the manned expeditions.

The idea of developing a joint Russian-European program to prepare for and realize manned research of the moon and Mars would also make sense. This will require the formulation of goals and tasks for each stage that are tied to real timelines and funding capabilities.

China has also shown significant interest in cooperation with Russia in the field of lunar research. At present, Russian and Chinese experts are analyzing the possibilities for a joint manned lunar mission.

As for a Martian program, its realization requires such enormous technological, economic, and intellectual resources, that not one country can carry it out on its own. Basically, the joint capabilities of the United States, Russia, Europe, Japan, and China make it possible to consider a manned expedition to Mars in first half of the 21st century realistic, if the efforts of various states are joined together and they fulfil the obligations they have undertaken.

Russian experts estimate that full-scale study and exploration of the moon can begin no earlier than 2020-25. Furthermore, many questions related to the reasons for putting men on the moon and other space objects, as well as their goals and tasks, remain open. We are ready for the closest cooperation with international partners to resolve these and other problems on a mutually beneficial basis.

SECURITY INDEX: As you have already said, space research is an arena of interstate competition. Nevertheless, recently some private companies have made their own launch attempts. How you do react to this course of events?

KRASNOV: I think that there are undoubtedly prospects for private space research. Space and space technologies are very complex technologies, and many, as a rule, begin with failures, but this should not be discouraging. Those companies that have already operated in this area for several years have the best initial potential. Suborbit (the arena of near-earth flight) represents real interest to business. By the way, almost no one knows it, but Russia is also working on this albeit, unfortunately, with the participation of foreign, not Russian, private capital. However, we should always keep in mind that this sphere is doomed to remain the subject of very close attention on the part of the relevant state agencies that are called upon to maintain controls over such sensitive things.

Notes

[1] This interview is based on an address by Alexei Krasnov, head of the Russian Federal Space Agency's Manned Programs Directorate, at a meeting of the Trialogue club held by the PIR Center on April 10, 2007.

[2] This refers to the National Space Policy, a conceptual document on U.S. space policy signed by George Bush in 2006. The document, in particular, envisions that in future Washington will not sign agreements that may limit its plans in space, and that it will attempt to limit the access of "hostile" forces to space.

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DISARMAMENT RETURNS

In the past decade we have all witnessed, and some have directly participated, in increasing the *quality* and *quantity* of weapons throughout the world. Suffice it to say that by 2006 global military expenditures had reached the incredible sum of $1.1 trillion.[1]

The U.S. defense budget makes up fully half of this amount: this is evidently the source of the offensive nature of U.S. military and political strategists' conceptual views, as well as the reason for their aggressive implementation. *It is the* Americans who set the tone and force everyone else, both allies and partners as well as opponents, to emulate them to the extent their financial, scientific, and technical capabilities allow, in order to ensure that the already doubtful balance of power is not completely destroyed. This is a great disservice that our American partners are doing to the rest of humanity. Yet it has become unfashionable to talk about and consider restraining the growth in defense budgets. Thus, for the foreseeable future the trend of continuing increases will remain.

THE CRISIS FACING DISARMAMENT POLICY

The rapid speed of improvements in military technology, the swift adoption of new technologies by the armed forces of many states and, as a result, the amendment of military doctrines to envision the use of military force to combat new threats and geopolitical challenges have all taken the global community unawares. As a result of this already fairly protracted period of confusion, the international legal underpinnings of arms control—which took decades to form—has begun to grow antiquated. In many ways **it no longer meets current needs**.

In recent years, the implicit balance that long existed between efforts in the area of classical disarmament on the one hand and in the sphere of combating the proliferation of weapons of mass destruction (WMD) on the other has been destroyed. However, here we in no way intend to set these two concepts against each other. Taken together, they constitute the essence and content of the global disarmament process. This is made quite clear by an enumeration of the well-known *13 practical steps* towards the realization of Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), adopted by the participants of the NPT Review Conference in New York in 2000.[2] As is well known, this document includes the early entry into force of the Comprehensive Test Ban Treaty (CTBT), the negotiation of a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices (Fissile Material Cut-Off Treaty, or FMCT), the early entry into force and full implementation of START-2 and conclusion of START-3 as soon as possible while preserving and strengthening the Anti-Ballistic Missile (ABM) Treaty as a cornerstone of strategic stability and as a basis for further reductions of strategic offensive weapons, and the application of the principle of irreversibility to nuclear disarmament measures, along with many other provisions.

One can note with satisfaction that on December 25, 2006 the Russian president signed the federal law *On the Ratification of the Agreement between the Government of the Russian Federation and the CTBTO Preparatory Commission on Measures Regarding International Monitoring System Facilities, envisaged by the Comprehensive Nuclear Test-Ban Treaty*.[3]The world has waited for the United States to take steps to ratify the CTBT for a long time, which would help to remove any serious doubts about the ultimate intentions of the United States.

However, subsequent events have shown that there is **generally little justification to hope for serious progress in the area of nuclear disarmament.** At least until the middle of the 21st century nuclear weapons will confidently occupy an *exclusive* spot in the arsenals of the recognized nuclear weapon states and strengthen their positions in the militaries of unofficial nuclear powers (India, Pakistan, and Israel). The capabilities of these latter states, which are not limited by any agreements, may soon become comparable to the nuclear arsenals of such powers as France, the United Kingdom, and China (Chinese nuclear capabilities are now estimated to total about 200 warheads; in 2004, they were estimated to be as high as 402).[4]

Certainly, not everything looks so bleak. In the past 10-12 years the number of nuclear warheads in the U.S. and Russian arsenals, as a result of various treaties, has been more than halved. But the rest of the world is *justified* in considering this to be too little. On September 30, 2005 the United States and Russia announced the completion of downblending 250 tons of HEU, enough for about 10,000 nuclear warheads, under the 1993 HEU-LEU Agreement.[5] At the turn of the 21st century the illusion arose that we were on the eve of a breakthrough. On November 13, 2000 the recently elected Russian president, Vladimir Putin, announced, "We see no grounds that would prevent further deep reductions in strategic offensive weapons. As is well known, we have proposed to the U.S., including at the highest levels, that the attainment of radically reduced levels of our countries' nuclear arsenals—down to 1,500 warheads for each country—should be set as a goal, which can quite feasibly be reached by the year 2008. But neither is this the limit: we are prepared in future to consider even lower levels."[6] Even General Goodpaster, who was president of the influential Atlantic Council of the United States in the late 1990s and a well-known *hawk* in his day, promoted the idea of START-3, START-4, and START-5 with a final result of a total level of 1,000 nuclear warheads for each of the official nuclear weapon states.[7]

But this did not happen. Radical Republican conservatives came to power in the United States who were convinced that the *American century* was coming, a century of protracted, undisputed U.S. military and political supremacy. They viewed well-known promoters of *détente* like Henry Kissinger as *defeatists*. Moreover, according to renowned American political scientist Rose Gottemoeller, President George W. Bush "has used two principles to dramatically change the United States' conduct of its arms control policy: first, emphasize unilateral action [...]; and second, be willing to discard arms control mechanisms that might be considered outdated or harmful to U.S. interests."[8]

The consequences of Washington's choice continue to be felt to this day. The ABM Treaty was quickly lost, and START-2 too disappeared for political reasons. START-3 was replaced by the Strategic Offensive Reductions Treaty (SORT), which differs significantly from previous treaties between the two countries. The traumatic reaction to the dramatic and unexpected events of September 11, 2001 marked the time to move towards the use of force, including unilaterally, to destroy terrorists throughout the world. One of the primary tasks became denying terrorists access to WMD. In 2003, Washington's Iraq catastrophe began; it continues to this day. The *global war on terror* has become the Republican administration's main political trump card, and has led to the revision of nuclear doctrinal concepts and the possible use of nuclear weapons. The world has witnessed the advent of the U.S. concept of a "new triad." Classical disarmament has been pushed firmly into the background.

We see excessive enthusiasm for the issue of WMD nonproliferation not only in the transfer of the center of gravity of diplomatic and negotiating work from *disarmament* to *nonproliferation*, but also in the transfer of personnel: negotiators and experts in key state participants in the negotiating process, like the United States and Russia, have been transferred from organizations involved in negotiating strategic and conventional weapons issues (organizations now in fairly rapid decline) to quite amorphous and very politicized organizations dealing with nonpro-

liferation issues. And some political scientists have introduced the traditional, unhurried process of *bilateral* negotiations into the analysis of multilateral nonproliferation issues. Thus, the number of individuals who are thoroughly versed in disarmament issues and know how to conduct negotiations competently has been greatly weakened on both sides of the ocean. Moreover, in 2005 the seventh NPT Review Conference in New York suffered a phenomenal failure, when agreement could not even be achieved on an *abbreviated* final communiqué. This can, in part, be blamed on the stagnation of the classical nuclear disarmament process.

It is clear that none of the important areas of arms control mentioned above should be held hostage to another. In both spheres significant problems that threaten security and stability, and could give rise to regional and even global crises, have been accumulated in equal degrees; as a rule, these problems affect Russia's direct interests. There is an indissoluble connection between these two spheres. For instance, the eminent expert Nikolai Sokov believes that the ineffectiveness of the current nonproliferation regime and, as it is now fashionable to assert, international organizations' incapacity to stop the spread of illegal WMD programs, could lead to a new role for nuclear weapons as an important element of so-called "counterproliferation."[9] The North Korean nuclear tests in early October 2006 will undoubtedly be cited to support this approach.

Russia has inherited the traditions in the area of the fight for disarmament. The decrease in its activities in this area has ended. There is every reason to expect that Russia will present proposals aimed, if not at stopping, then at least at slowing the most dangerous aspirations of those who believe that there are neither commonsensical nor other limits to their ambitions.

One of the basic tenets of Russian military doctrine is that Russia must have sufficient nuclear capabilities to cause "predetermined damage" to any aggressor "in any situation."[10] In other words, Russian nuclear forces must be able to survive a massive unexpected attack and respond by inflicting on the aggressor the aforementioned "predetermined damage." Essentially, the concept of nuclear deterrence, which has proven itself over the course of many years, is based on this approach.

Today one often hears, albeit unofficially, the more militant Republicans in Washington say that given their current military superiority, including in the area of nuclear weapons, the United States can beat any enemy in a nuclear conflict. This attitude was expressed in a sensational article in the journal *Foreign Affairs* written by two little-known experts.[11] The article can essentially be seen as a provocative probing of world reaction to ideas that are being examined in the Pentagon. Donald Rumsfeld recently left, without having achieved a final victory in Iraq. Immediately thereafter, a Defense Science Board report appeared that was quickly "leaked" to the press. It poses the question of whether further negotiations on strategic nuclear force reductions should be rejected and whether the U.S. deterrence capability should be retained and strengthened since "Russia's future as a democratic state remains uncertain."[12] This could, if it actually becomes administration policy, seriously complicate any further steps towards nuclear disarmament. In any case, the vagueness of Washington's position on negotiations to replace START-1 with a new agreement is not coincidental, to say the least. The *Foreign Affairs* article apparently originated in the same circles and was in part aimed at cheering up the Pentagon and distracting it from its agony in Iraq and Afghanistan.

CHALLENGES FACING RUSSIA

The Russian leadership noted the appearance of the U.S. concept of a "new triad." In a report to a meeting of the Russian armed forces leadership on October 2, 2003, Minister of Defense Sergei Ivanov focused attention on the possibility that U.S. nuclear weapons may once again become real military tools, if certain technological advances are applied to them. Here we are talking about a transformation from a deterrent force into battlefield weapons. In practice, this means lowering the threshold for the use of nuclear weapons, which is indeed implied by the "new triad" concept. Naturally, this means that the general staffs of various states will have to restructure military command and control and the principles upon which the use of their armed forces are based.[13]

For its part, the Russian leadership has now adopted the "principle of preemption" against international terrorists, thereby increasing its flexibility of action and ability to oppose dangerous trends in a timely manner. However, this does not imply the use of nuclear weapons.[14]

Of course, for the foreseeable future, in the absence of a direct military threat, Russia must not burden itself with catastrophic ideas about maintaining nuclear parity not only with the official nuclear states as a group, but even with the United States alone. We do not have the right to repeat the mistakes that cost the Soviet Union so dearly. But maintaining a persuasive nuclear deterrent as a key element of ensuring strategic stability is a duty of the nation's leadership to its people, a fact that was expressed clearly in the 2000 "Fundamentals of Military Doctrine," where it said: "The Russian Federation maintains the right to use nuclear weapons in response to the use against it and/or its allies of nuclear or other types of weapons of mass destruction, as well as in response to large-scale aggression using conventional weapons where Russian national security is threatened."[15] Thus, the right to a nuclear first strike is maintained under certain circumstances. This requires not just a reconsideration of our approaches to nuclear force structure, but also the allocation of the necessary financial and material resources in full measure, in order to ensure the survivability and controllability of our reduced nuclear capabilities at the highest level of reliability, taking into account the continual improvements in both nuclear and non-nuclear offensive weapons in modern warfare.

To date our strategic nuclear forces have not attained the necessary level. If we consistently work towards this goal, then provocative thoughts about the possibility of conquering us in a nuclear conflict will not arise. Russia should on no account be drawn into another nuclear arms race, something on which our American partners are evidently secretly relying.

To indicate the seriousness of our intention to protect our national security and territorial integrity, we believe that the Russian leadership must adopt a sort of "pre-nuclear deterrence system" as a political signal. This system would also be based on long-range high precision weapons, which would be used to destroy "high value targets" on the territory of a potential aggressor in order to demonstrate a willingness to respond to threats through escalation if necessary. This would provide significant flexibility and a plan for initial actions. In the overwhelming majority of situations the very existence of this "pre-nuclear" deterrence system will serve as the key deterring factor. In this the author shares many of the views of the well-known Russian strategic weapons expert Alexander Saveliev.[16] Attaining this sort of capability does not require the construction of new forces.

THE U.S. "NEW TRIAD" DOCTRINE AND ITS IMPLICATIONS FOR DISARMAMENT

The 2002 Nuclear Posture Review outlined the key trends in the development of U.S. nuclear force structure in the coming five to ten years. They are in part the result of the new U.S.-Russian relations in the strategic sphere, where both sides have reached an understanding that they no longer see each other as enemies and are ready to work together to combat new challenges and risks, particularly in the area of international terrorism. The most important idea embraced in the "new triad," if we do not separate it from the well-known old term strategic triad, is somewhat disorienting. According to the new document, it consists of:

- ❑ offensive strike systems (both nuclear and non-nuclear);
- ❑ defense (both active and passive);
- ❑ revamped defense infrastructure, which will ensure a timely reaction to threats that arise.

This "new triad" is tied together by the *C2* command and control system and corresponding reconnaissance capabilities.[17]

The idea has yet to obtain its final form, and attempts to sell it to the U.S. Congress to date have met with only mixed success, due to the likely high costs of implementation as well as probable political costs. But one should keep in mind that although the strategic nuclear elements of the old triad would only become one part of the "new triad," ICBMs, SLBMs, and nuclear-

armed strategic bombers would continue to play a decisive role in nuclear policy. It is clearly stated that Russia's nuclear capabilities remain an issue of concern. If U.S.-Russian relations deteriorate seriously in future, the United States may need to reexamine the levels of its nuclear forces and related planning.[18] Thus, agreed levels could also be revised. Indeed, the structure of the old strategic nuclear forces has remained the same; moreover, Washington does not plan to go lower than the level of 2,200 nuclear warheads (in addition to about 1,500 in reserve).[19] Furthermore, work on the development of a new ICBM to replace the *Minuteman III* has already begun; it is scheduled to enter service in 2018.[20] This sort of plan cannot be explained by any strategic goals other than an intention to preserve a powerful nuclear deterrent aimed against Russia. The recent decline in U.S.-Russian relations clearly strengthens this idea, and even the possible accession of a Democrat to the presidency is not likely to change this constant component of U.S. policy.

New nuclear systems under consideration include high-precision nuclear warheads with a yield of about 10 tons (so-called "micro-nukes") for the destruction of hardened, buried targets; 1,000-ton yield nuclear warheads for battlefield use (so-called "mini-nukes"); nuclear warheads for the anti-missile defense system with yields of about 100 tons (also "mini-nukes"); as well as several other new types of nuclear weapons.[21] The intention is to reequip the *Minuteman III* with *W-87* warheads and retain the *W-88* warheads on the *Trident 2* SSBN, which is exclusively designed for rapid destruction of hardened targets: ICBM launch silos, sites where mobile ICBM launchers are based, and underground military command centers. It is no secret that these are the components of the nuclear infrastructure of just one country: Russia. The well-known opponents of these plans, Democratic Senators Edward Kennedy and Dianne Feinstein, expressed themselves very clearly in this regard. The former noted that current policies "jeopardize the entire architecture of nuclear arms controls so carefully negotiated by our leaders over our lifetimes," while Senator Feinstein said that "This administration seems to be moving toward a military posture in which nuclear weapons are considered just like other weapons ... a usable instrument of military power..."[22] One can only hope that now that the U.S. Congress is once again controlled by Democrats, these esteemed senators will maintain their policy views, which may open up possibilities for cooperating with them and, at the very least, the U.S. rejection of the more offensive notions. Russia appears to have a good chance to propose another vision of the nuclear future.

During his meeting with Defense Minister Ivanov in Alaska in August 2006, his then-U.S. counterpart Donald Rumsfeld announced, "The United States is looking into the possibility of taking a relatively small number of our ballistic missiles and taking a nuclear weapon off and putting a conventional weapon on a ballistic missile. We would be happy to see the Russian government decide to do the same thing."[23] The U.S. Air Force believes that several dozen ICBMs could be refitted with nonnuclear warheads over the course of two years for a relatively small sum.[24] It is becoming clear that under the pretext of the dire need to combat international terrorism, they are proposing the introduction of various high-precision nonnuclear strike forces, in some cases circumventing START-1 provisions. As evidence, note the reequipping of several SSBNs as "special purpose" boats.[25] The United States already has projects like the *Minotaur II* and *Minotaur III*, where an increase in the power of nonnuclear missiles and SLBMs is planned through the use of higher energy explosives and other technologies. It would appear that the idea here is to increase counter-force options.

Donald Rumsfeld's proposal to reequip a portion of ICBMs and SLBMs with nonnuclear warheads is apparently seen in Washington as a way to remove them from the limits of existing international agreements. Understanding the vacillations in their argumentation is difficult. Although the absence of the necessary level of transparency makes it impossible to determine what warhead is on a missile, the idea of discussing the relatively nonconfrontational problem of "the false identification of a non-nuclear strike" has been neglected. U.S. specialists hold forth as though this question has already been solved, even proposing separate launch sites for ICBMs with non-nuclear warheads, in particular at bases in California and Florida. Apparently U.S. strategy views this ambivalence as advantageous, and they need at least Russia's tacit agreement to this reorganization of the strategic forces.

Now we are stuck with this problem and the question is no longer so much about "identification" as about ensuring the strategic stability both sides traditionally like solemnly to declare. The latter is feasible, thanks to an increase in the predictability of the actions of both parties and the regular removal of goads for a first strike. However, we have still not dealt with the problem. Probably we should make use of it to reactivate talks with the United States about the future of strategic arms, something our partners are persistently avoiding.

COULD HIGH-PRECISION WEAPONS REPLACE NUCLEAR WEAPONS?

The eminent Russian scientist and designer, general director of the State Scientific Center for Aviation Systems and member of the Russian Academy of Sciences Yevgeny Fedosov has written, "The main landmarks of the 21st century—a globalized economy, a post-industrial informational society, and increased terrorism—are not completely compatible with nuclear weapons."[26] The military conflicts that we have seen in the past decade testify to the *birth of a new type of war*.

The concept of a "front" has been erased; it was basically absent in the Balkans, Afghanistan, and Iraq. Instead the concept of "non-contact military actions" emerged. Precision weapons were used as the main weaponry (as a rule, cruise missiles with a broad range of operation), as well as guided smart bombs and new methods of reconnaissance, targeting, and delivery like unmanned aerial vehicles (UAVs). Ground forces were only used after the crushing defeat of the enemy for holding territory, mopping up operations, and eliminating any remaining pockets of resistance. None of this would require the use of nuclear weapons, regardless of all of the talk about the importance of mini-nukes for the destruction of hardened facilities or terrorist groups hidden in deep caves.

In Fedosov's opinion, highly developed countries that have valuable infrastructure are under increasing public pressure to prohibit the absolute weapon—nuclear weapons—just as chemical and bacteriological weapons have been banned. On January 8, 2007, clearly responding to this attitude, the prominent former statesmen Henry Kissinger, George Schultz, William Perry, and Sam Nunn, who have expended considerable efforts in the past to argue for the irreplaceable role of nuclear weapons, proposed in the *Wall Street Journal* that reliance on nuclear weapons gradually be replaced, to debunk the powerful aura that accompanies them. This is not a new idea. In 1999, the "nuclear hawk" Paul Nitze also came out with the idea of rejecting nuclear weapons. In the United States this sort of enlightenment is sometimes referred to as the "retired politicians and generals syndrome." It is not surprising that many people currently working in the State Department, even those dealing with disarmament issues, had not even heard of the article written by the four former statesmen. At the same time as the retired policymakers are promoting disarmament, the current administration is moving in the opposite direction: the United States has adopted the Complex 2030 program that envisions the in-depth modernization of eight key U.S. nuclear weapons complex facilities and at least seven of the nuclear warheads that are now employed on nuclear weapons. These two trends are likely to continue fighting it out throughout the first half of the 21st century.

If Russia falls behind in the technological development and construction of precision weapons (both defensive and offensive), serious new risks and threats may arise. For the Russian military, moving to a mix of nuclear and non-nuclear weaponry (primarily, narrowing the gap with the United States and NATO in the equipping and developing of principles for the use of precision weapons by ground forces, the air force, and the navy in combat operations) should become a priority task in the near future. This does not mean that there should not also be attempts to limit the use of precision weapons by the United States and other Western countries through legal treaties and other agreements.

Under the current circumstances, the view of the role of tactical nuclear weapons is beginning to change; in U.S. policy these weapons are beginning to lose their importance.[27] Several concepts are being advanced that agree that it would make sense to develop a new international agreement that would cover both strategic and tactical warheads and delivery systems. It is unlikely that such negotiations could become a reality in the foreseeable future. Adding all

nuclear powers to negotiations on the reduction of the nuclear weapons, however, is long overdue.

SPACE ON THE AGENDA

The issue of space is an ever greater topic of concern. Several memorable anniversaries will be marked in 2007: 150 years since the birth of Konstantin Tsiolkovsky, the founder of theoretical cosmonautics; 100 years since the birth of Sergei Korolev, responsible for the Sputnik program; 50 years since the launch of the first artificial satellite; and 40 years since the signing of the Outer Space Treaty (which entered into force on October 10, 1967). As is well known, the treaty forbids the placement of nuclear weapons and other forms of WMD in space, the establishment of military bases and facilities in space, and the conduct of military maneuvers there. However, the issue of the deployment of weapons in space has arisen with new force recently, since the current agreement does not completely cut off the deployment of weapons in space based on new physical principles. Technical advances in the area of laser technology and electronics have nearly made it possible for certain countries to obtain military superiority over all others in space, particularly in the context of antimissile defense.

Russia has already officially stated at the United Nations that it is prepared to declare formally that it would not be the first nation to deploy weapons in space. Our partners, the Americans first and foremost, did not respond. Furthermore, on October 18, 2006 Washington promulgated a new national space policy based on a document signed by the U.S. president on August 31, 2006. This document supersedes presidential directive NSC-49/NSTC-8 of September 14, 1996. An initial analysis of the new document indicates, in my opinion, that the United States, acting unilaterally, is trying to ensure that it has complete freedom of action in space in its own national interests. It has declared its refusal to consider new legal norms of a prohibitive or limiting nature. It has proclaimed that Washington does not intend to allow other countries to have capabilities in space that it views as "hostile" to U.S. national interests. The right to determine what is "hostile," naturally, remains the right of the United States alone. Moreover, the U.S. Defense Department has been given the task of developing ways to prevent possible enemies from maintaining their freedom of action in space. Basically, the new U.S. space policy openly proclaims the long-term doctrine of achieving supremacy in space. This new doctrine does not directly discuss the possibility of deploying weapons, including nuclear weapons, in space. However, the Pentagon's task—to use capabilities in space to ensure an integrated multi-echelon antimissile defense system— fits perfectly in the tasks of the "new triad," and for this reason alone demands that discussions with the United States be held over the legitimacy of such an approach.

On February 10, 2007, speaking in Munich at an international conference on security policy, Russian President Vladimir Putin expressed his belief that an attempt to militarize space could lead to unpredictable consequences for the international community, and provoke nothing less than what occurred at the beginning of the nuclear era. The Russian president noted that Moscow had prepared a draft of an agreement to prevent the weaponization of outer space and would send it to all of its partners as an official proposal.[28] The "moment of truth" will come. Will a serious international discussion begin?

How realistic is it for such a discussion to begin given the current circumstances? There are provisions in U.S. doctrine that speak of the U.S. adherence to the idea of all countries conducting research or otherwise using space for peaceful purposes, as well as its support for mutually beneficial international cooperation. Apparently the United States is not completely closing the door to negotiations over some types of legal regulation of space activity.

While the U.S. Administration is declaring its opposition to the development of new legal instruments to prevent the further militarization of space, Russia should increase its efforts to keep space free of new types of weapons and develop measures that would help to ensure the predictability of the strategic situation in space. We will have enough allies in this area.

One should also keep in mind that the U.S. approaches to the space issue, like its approaches to other disarmament processes, follow a familiar pattern. First, as a rule the Americans are the

initiators of new arms races. Second, their unconcealed aim is to attain the maximum military advantage and attempt to maintain it for as long as possible. Third, it is becoming typical that even if they do not avoid the negotiations process itself, they avoid any obligations that might tie their hands or limit their maneuverability. Finally, the United States is trying to remove its most advanced military technology and weaponry from international and bilateral control.

On January 11, 2007, the People's Republic of China unexpectedly conducted an anti-satellite weapon test. At a height of over 800 km in space, the *KaiTuoZhe-2* missile destroyed the *Feng Yun 1S* satellite launched in 1999. Regardless of all of the disagreements in the analyses of the technical and legal aspects of the Chinese test, it is plain that the Chinese were sending a clear signal to the world that they do not plan to leave space to the Americans, and are prepared to fight for its use in the interests of their national security. There is a signal for Russia here too. We need clearly to determine and guard our own interests, and at the same time push public opinion to support the peaceful use of space.

WITHOUT TRUST, WITHOUT IRREVERSIBILITY

The current administration in Washington came to disarmament with the idea that the time of legally enforceable agreements was over, and that we should *lean* more on confidence-building measures and the like. The time of President Reagan, with his famous "trust, but verify," was transformed into "we insist on the complete verification of you, but you should not claim the right to verify us."

The problem is that Russia and other countries trust the Unites States less and less. And the situation is approaching a critical phase. START-1, with its carefully developed system of mutual information exchange and monitoring of implementation, will expire in 2009. Before the G8 summit in St. Petersburg, President Vladimir Putin called on our American partners to begin a dialogue about replacing this key treaty with appropriate agreements. The year 2007 has come and the matter has barely been touched. Doubts arise: is the Bush Administration, which became a "lame duck" administration after the November 2006 elections, capable of constructive achievements in the disarmament sphere?

To date, Russia has attained one far-reaching arms control achievement with the George W. Bush Administration: the 2002 Strategic Offensive Reductions Treaty (SORT), the fulfillment of which will lead to the dismantlement of an additional 1,000 nuclear warheads. But it too will end fairly soon: in 2012. A high estimation of this agreement on behalf of the global community was given by U.N. Secretary-General Kofi Annan, who nevertheless took the opportunity to remind all that "the United States and the Russian Federation... must do more, including... pursuing arms control agreements that entail not just dismantlement but ***irreversibility***" (emphasis mine—author).[29]

The latter is of fundamental value. The SORT agreement, due to U.S. obstinacy, does not resolve the problem of reversible capabilities, that is, the majority of warheads are removed from service but not destroyed—they are simply put in storage. If needed, they can be returned to use. In the mid-1990s, U.N. Under-Secretary General Jayantha Dhanapala pushed the idea of *decoupling*—removing warheads from delivery systems and storing them separately—a concept very similar to the one used in SORT. However, even then many experts expressed doubts that this would be an effective disarmament measure. They said that this was more of a confidence-building measure. But it was already clear to experts that the very construction of this agreement was vulnerable to abuse. Under these circumstances, the slogan "verify" is particularly urgent where the United States is concerned, since it intends to maintain 1,500 nuclear warheads in so-called "reserves."[30] The U.S. and Russian approaches have diverged.

This has also been made fairly clear by the consequences of the Bush Administration's destruction of the ABM Treaty. Recent plans to establish a so-called third missile site in Europe very near Russian territory, for the deployment of part of the multi-echelon missile defense system, allegedly against Iranian missiles, was in fact a step planned long ago. The point here is not the Iranian threat so much as U.S. plans to obtain yet one more lever to use to pressure not just Russia, but its European allies as well.

NUCLEAR TESTING

Russia's strategic relations with the United States take a variety of forms, from the great number of issue areas where we relate on a bilateral basis to our mutual interactions within the framework of various multilateral agreements and negotiations. Here I would like to point out two particular sore points: ratification of the Comprehensive Test Ban Treaty (CTBT) and the issue of the compliance protocol to the Biological and Toxin Weapons Convention (BWC).

In the case of the CTBT, on its enormous financial and technological superiority the United States initially expected to *suffocate* its partners in the nuclear club, Russia and China first and foremost, through the tenacious embraces of the CTBT. The Republicans inherited this policy from the Democrats. To some extent, they also based, and continue to base, their calculations on the idea that given a moratorium on nuclear testing (the moratorium beginning in 1992 under the CTBT along with the longer-term unilateral Soviet moratorium), the speed of the degradation of Russian nuclear weapons would grow sharply and the years with the CTBT in force would conclusively lock in the significant U.S. nuclear advantage.

Indeed, in a number of areas Russian nuclear warheads may be inferior to the most advanced U.S. nuclear warheads. But because our construction occurred under less "stressed" conditions, our experts were able to install higher margins of reliability, given the uncertainties about factors related to aging. This practice paid for itself many years ago, though the issue requires the continued vigilance of our nuclear specialists. But what about the Americans? Despite all of their contrivances and precision construction, U.S. nuclear warheads have proven to be quite capricious and extremely sensitive to the effects of aging. An analysis of the intentions expressed in the Reliable Replacement Warhead (RRW) program indicates that it is precisely ensuring the reliability of warheads that has become a difficult issue for them. In the RRW program they declare that their goals will be met without nuclear tests. Whether they can succeed in this is a big question. At the very least, the as-yet-unsuccessful attempts by the current administration to obtain congressional approval for a reduction of the timeline to ready the Nevada Test Site from 36 months to 18 months raise suspicions.[31] The United States has become a hostage to its earlier policy and is going to try to find any possible way to renew tests of the reliability of its nuclear arsenal at the minimum political cost to itself. Therefore, we should also expect increased attempts to reinvigorate the "race" for scientific and technological advances between the nuclear weapons complexes of the nuclear weapon states. Huge expenditures are already being made on computer simulation and on the equipping of test ranges for non-explosive testing. We should expect that there may be additional big surprises emanating from the United States in this area in future.

Although Russia (unlike the United States, which is betting on a preemptive and preventive disarming strike) only has plans to use nuclear weapons as a response to aggression, we too need more powerful munitions. Since we do not have a surplus of nuclear weapon delivery systems, we must maintain the existing arsenal at the necessary quantitative levels (though this does not mean the current levels cannot be reduced). This also ensures the success of nuclear deterrence. As the great Lomonosov wrote to Count Shuvalov in his letter of November 1, 1761, this "is the task of maintaining the military art in times of lasting peace."

NEW THEATERS OF MILITARY ACTION

The group of individuals currently in control of the U.S. Republican Party is actively carrying out a "revolution in military affairs" that was actually begun under President Bill Clinton. Basically, the idea is that the U.S. military should be re-equipped with new technology and optimized so that the U.S. leadership can project U.S. power globally, to any part of the world. Naturally, these aspirations required a political framework, which took the form of the "revolution in strategic affairs" concept. However, the George W. Bush Administration has expanded his predecessor's plans considerably.

Under this revolution, the U.S. military has begun operating in fundamentally new theaters. It is astonishing, but most of these new theaters have proven to be on former Soviet territory: the Caucasus, Central Asia, the Caspian Sea, etc. The realization of this concept in practice should

be closely watched by the Russian leadership. For example, why do we need the creation of the so-called *Caspian Guard* according to a U.S. scenario, which naturally involves the critical participation of the U.S. Armed Forces, a country neither geographically nor politically belonging to the region? After all, Russia has already proposed the creation of a military force to ensure Caspian security (CASPFOR). Why compete?

IS THE CFE NEEDED?

The conclusion of the 1990 Treaty on Conventional Armed Forces in Europe (CFE) was a great achievement of multilateral diplomacy and negotiation. When the CFE was concluded, hopes were raised that we were on the way to strengthening European security and stability. Initially, this was true. For 16 years all of the treaty States Parties, Russia first and foremost, reduced heavy weaponry by a combined total of 63,500 pieces, while military personnel were reduced by more than two times: to three million persons. The CFE is still a key element in NATO-Russia relations, but is gradually losing its urgency and its logic.

Firstly, thanks to the radically changed political and strategic situation in Europe, already questionable concepts like flank limitations within national borders, which currently only apply to Russia and, partially, to Ukraine, are, in our opinion, completely senseless. In their day, they greatly interfered with Russia's ability to conduct counter-terrorist operations in the North Caucasus. The author, as a participant in developing the mandate for the CFE negotiations, remembers well how Russia compromised with the West, particularly Turkey, in determining where the border of the so-called "exclusion zone" would be drawn through Turkey in Asia Minor where, according to the Turkish military, they were undertaking counterterrorist operations against rebel "mountain Turks" (in reality, Kurds). The West did not meet Russia half-way in the North Caucasus until the United States and Europe themselves were affected.

Even today, they continue to remind us about the so-called "complete fulfillment" of the Istanbul Commitments and have therefore blocked ratification of the adapted CFE Treaty for many years. This raises two questions. The first is whether there is a common understanding, in the West in particular, as to what the "complete fulfillment of the Istanbul Commitments" is? And second, in our view the current version of the adapted CFE Treaty has so aged that it must be adapted anew, taking into account the elimination of the "gray zone" when the three Baltic states joined NATO and the consequences of the most recent NATO expansion, as a result of which the states now entering the Western bloc are now using arms quotas that they formerly acquired as states that did not belong to this bloc.

As an active participant in the negotiations, I still remember one of the remarkable NATO arguments in favor of as large reductions as possible in what were then Soviet weapons: the very particular regional pattern of the force posture on Soviet (Russian) territory. We asked our NATO counterparts why they insisted on these complications, and if they really thought we intended to attack them. To which they very calmly replied: "No, we are certain that you do not plan to attack us, but you have *military capabilities* that project into sensitive NATO regions, so we need geographical troop limitations in addition to quantitative limits." Mikhail Gorbachev decided to meet the wishes of our Western partners halfway, given that it appeared that they were making sincere declarations about friendship and cooperation, including the assertion that they had no intention of expanding NATO. We all know what happened then. It is time to show the West common sense in practice and make reciprocal moves.

A lot of water has flowed under the bridge since that time. Russia lived through a long period of weakness that our partners took advantage of as much as they could. It has come time to tell our NATO partners the same thing they once told us: **"You may not intend to attack us, but your *military capabilities* and, most importantly, their deployment along Russia's borders, raise our honest suspicions, and even Russia-NATO cooperation can by no means remove all of our concerns."**

As a person involved in formulating the CFE Treaty, it is especially sad for the author to realize that the treaty's current form does not meet currently ensure equal security for all countries on the European continent, and moreover does not sufficiently meet Russia's own national secu-

rity interests. However, rejecting the outdated, but very important document without proposing anything in its place is easy. It would be more proper and reasonable if Russia were to come out with a full-fledged vision for the provision of security in Europe today and in the future, taking into account present realities, that could incorporate current ideas about ensuring the balance of interests of all countries.

More than 100 years ago, one of the first Russian experts in geopolitics, Aleksey Vandam (the pen name of Major General of the Imperial General Staff Aleksey Edrikhin), wrote an interesting recommendation: "In Europe we should by no means put our head on the pillow of agreements with peoples whose skill in the fight for life is much more advanced than our own; we must rely on ourselves alone."[32] This observation by the tsarist general and Russian patriot appears especially accurate today, when we more and more often hear Western statements averring that Russia's energy riches should supposedly belong to the entire world (by which they mean the West).

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The Bush Administration and the Putin Administration are both entering the presidential election cycles in their countries. The acting heads of state in these two countries are not likely to have time to solve all of the problems that have accumulated in the area of arms control. But we have the right to expect that they **at least start projects so that their successors can continue this work of global importance**, strengthening security and strategic stability, particularly in the nuclear sphere. It appears that Russia is basically ready for this. But are our American partners?

Carl von Clausewitz wrote, "People's main error is that they fear today's misfortunes more consequences of dangerous new military technologies and classes of weapons through timely political and legal steps. Otherwise, a long and debilitating arms race and new, difficult crises and confrontations await us once again.

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Andrei Frolov

IRAN'S DELIVERY SYSTEMS CAPABILITIES [1]

In late 2006 the United States announced plans to deploy elements of an anti-missile defense system in Eastern Europe. The White House's official justification for the plans was the need to defend Europe against Iran and North Korea--states that possess or intend to possess nuclear weapons. The deployment of U.S. missile interceptors in Poland and radars in the Czech Republic has already resulted in a confrontation between the West and Russia. Russians believe that the U.S. arguments are groundless, and recently proposed the joint use of the Soviet-built radar in Azerbaijan. But does Iran really have the capability to create nuclear weapon delivery systems such as ballistic missiles, bombers, and submarines?

The examples of official nuclear weapon states, as well as India and Pakistan, indicate that nuclear weapons did not appear in a vacuum, but together with means of their delivery. Moreover, in many respects it was these delivery systems that determined the mass and dimensions of the warheads as well as their possible applications. Furthermore, in all of the above countries, with the possible exception of Pakistan, the first delivery system, chronologically, was aviation, and only later were ground-based and sea-based missiles developed. Before testing their first usable nuclear bombs, all of these countries already had aircraft in series production that could be employed at the tactical and, partially, the intercontinental level (at least via the "one-way ticket" tactic, like the Soviet Air Force's *Tu-4* and *M-4* bombers).

The examples of North Korea and, partially, Iran (if one assumes that the Islamic Republic of Iran does in fact intend to develop nuclear weapons) are of particular interest here. When you begin to analyze the data about their missile and nuclear programs carefully, you cannot fail to think about the "chicken and egg" dilemma: what comes first and what follows in these states' military strategy—the creation of a nuclear bomb, which will necessitate the development of means of its delivery, or the relatively successful development of means of delivery leading to an acceleration of nuclear weapons programs?

BALLISTIC MISSILES

At present, Iran is one of the most "dynamic" missile states. This is attested to by the fact that from the mid-1980s through the end of the 1990s there were 23 known missile programs in the country, a record unsurpassed in recent years.[2] By 2000-01 Iran had nine programs for the production and development of ballistic missiles.[3] The Iranian missile program, which took the shape in the 1990s through the testing and production of the *Shahab* missile, is the result of

long-standing work by the Iranian leadership, resting on a foundation established under the Shah's regime.

Already in the 1970s, Iran had concluded a number of agreements with U.S. firms not just for the production of aircraft fuselages and "surface-to-air" missiles in Iran, but also for joint production of "surface-to-surface" missiles with a throw-weight of 350 pounds (approximately 140 kg).[4] One should also note that in 1974 the United States exported *MGM-52 Lance* missiles to Iran with a range of 130 km.[5]

As a result of the Iran-Iraq war, Iran entered into the "closed" club of states that had made substantial use of ballistic missiles in war. There are few such states: Germany (in 1944-1945, using *A-4* rockets, also known as *W-2*), Egypt (a limited number of Soviet *SCUD* missiles were used against Israel in the 1973 war), Iraq, the Soviet Union/Russia (*FROG-7* missiles in Afghanistan, *SCUDs* and *Scarabs* during both Chechen wars), Afghanistan (after the departure of Soviet troops in 1989, the Afghan government used *FROG-7* and SCUD missiles against the mujahedin), Libya (in the border wars in Chad, as well as when they fired at the U.S. base on the Italian island of Lampedusa in 1986), Yemen (*SCUD* and *Scarab* missiles were used in the civil war in 1994) and Yugoslavia (in Kosovo).[6] Among these nations, Iraq and Iran occupy the second and third places in terms of the number of missiles fired (Germany is in first place, with 3,165 combat launches of the *A-4* missile, of which 543 exploded on launch[7]).

Thus, Iraq had already fired *FROG-7* tactical missiles at its opponent in 1980, in total launching approximately 70 at Iranian cities.[8] Subsequently, Iraq moved to the use of medium-range *R-17 (SCUD-B)* missiles. In 1983, 37 missiles were launched at Iran, both at Tehran and at other sites.[9] In 1985, Iraq was already launching 82 missiles at its enemy.[10]

The "war of the cities" exerted a strong influence on the Iranian leadership and its determination to develop its missile program. As a result of Iraqi missile attacks, approximately 5,000 people (the overwhelming majority of whom were civilians) perished. The missile attacks had a significant psychological and social influence on the country's population, primarily due to the constant fear of being harmed by the "dumb" weapons, which the Iraqis predominantly used again densely populated parts of the country.

Due to its inability to defend against Iraqi missiles, Iran decided to obtain its own missiles. It therefore expanded the military industrial base created under the Shah, made significant investments in rocketry R&D, and initiated cooperation in this sphere with the PRC, North Korea, Libya, and Syria, and undertook large-scale missile purchases. These efforts already began to produce results in 1985, when the Iranian military, the Islamic Revolutionary Guards in particular, obtained the first mobile *SCUD* missiles.

The first ballistic missiles came from Libya, with which negotiations had begun in 1984. According to foreign sources, in 1985 the first tranche of 20 missiles and two *MAZ-543* transporters arrived in Iran.[11] At the time, Iran's missile units supplemented the air force's significantly weakened strike power.

Iran began producing missiles nearly immediately. The country produced 14 ballistic missiles in 1985, 16 in 1987, and 76 in 1988.[12]There are reports that during the war, Iran launched 120 *SCUD-B* ballistic missiles at its enemy, with a maximum range of 325 km.[13] Iran's strategy was to target civilian Iraqi sites exclusively to stave off missile strikes on its own cities and industrial facilities, i.e. scare tactics were used.[14] It became clear that in order to counter the Iraqi threat, both at the time (of military actions) and in the future, Iran needed ballistic missiles with a variety of ranges and warhead yields. There were two possible ways to meet this goal: importing complete missile systems or arranging for domestic production and the assembly of imported components.

By 1987, it became clear that Libya and Syria could no longer meet Iran's ballistic missile needs; thus, Iran's attention turned to North Korea, which not only had a significant number of the same type of ballistic missiles in its arsenal, but also produced them. Therefore, beginning in 1986-87, Iran's main partner in the missile sphere became North Korea.

Available information indicates that in the late 1980s Iran pursued both methods of obtaining missiles. In 1987, the Iranian government stated that the country was then producing a certain number of *Shahab-1* missiles.[15] Western analysts believe that a Soviet *R-17* missile, which had been obtained from Libya, served as the model for them.[16] Most likely, at this stage Iran was actually undertaking the "turn-key assembly" of "missile complexes" supplied from other countries, primarily North Korea. Thus, during the Iran-Iraq war, North Korea supplied Iran with about 100 *SCUD-B* missiles and equipment for their production. According to other sources, in 1987-92 North Korea supplied about 200 ballistic missiles and 6-12 mobile launchers.[17] Although in the beginning the missile program was run out of the Islamic Revolutionary Guards, by 1989 production facilities had already been put under the Defense Industries Organization. But the missile units continued to be directly under the jurisdiction of the Islamic Revolutionary Guards. At about this time, Iran switched to completely independent missile production. The characteristics of these missiles were fairly similar to the Soviet *R-17*: a flight range of 50-300/320 km, a warhead mass of 985 kg, and a maximum error of 450-800/1,000 m.[18] The *Shahab-1* turned out to be the most "martial" Iranian missile: during the Iran-Iraq war about 90 were launched, while in 1994-2001 another 50-80 more (according to different sources) were launched at rebel bases in Iraq.[19]

In 1991, North Korea began supplying perfected *SCUD-C* missiles to Iran, which the Iranians designated the *Shahab-2*. According to foreign expert assessments, about 60 missiles assembled in North Korea were supplied to Iran, while in late 1991-early 1992 Iran began to produce them independently.[20] Western experts estimate that approximately 170 missiles of this type were produced.[21] This missile represents a significant step forward in comparison to the previous version, since its maximum flight range is 500 km (its minimum is 50 km), the warhead weighs 500 kg, and its maximum error is 1,000 m.[22]

According to Western sources, cooperation between these two countries was not limited to this. In 1991, in addition to providing *SCUD-C* missiles, North Korea provided technical assistance in the development of *Shahab-3* missiles (in the mid-1990s, Western sources also believed that this project was initially called the *Zelzal-3*[23])—particularly in the area of increasing missile accuracy—which, according to the experts, are a further development of the North Korean *Nodong-1* ballistic missile.[24]

Strong working-level ties were established between the two countries in the early 1990s. Thus, in April 1993 the first group of Iranian experts—a group of 15 men headed by Brigadier General Manteghi, head of the Defense Industries Organization, arrived in North Korea.[25] After this first visit, there were supposedly over 300 more Iranian experts who received instruction in North Korea.[26] According to Western media reports, Iran initially planned to purchase and produce at its own factories a total of about 150 *Nodong* missiles.[27] These assessments indicate that North Korea supplied Iran with 5-12 ballistic missiles and four launch systems in 1994-97.[28] In 1997-2002, a second tranche of North Korean missiles was supplied, about 20 "missile sets" in all.[29] According to 2001 estimates, Iran planned to produce on the order of 20 missiles per year; small-scale production using North Korean engines had already begun by 2001.[30] Evidently using both the missiles it already had and in expectation of new supplies, in 2000 the Islamic Revolutionary Guards created five new missile units armed with *Shahab-3s*.[31]

It is interesting to note that the missiles and components were probably sent from North Korea to Iran by air. In June 2003 the South Korean newspaper *JoongAng* reported that since April 2003, an Iranian *Il-76* medium-sized transport aircraft had been noted at the Pyongyang airport Sunan several times. This plane apparently transported the dismantled *Nodong* missiles in containers.[32] The South Korean journalists also reported that through 2003, Iranian transport workers were seen in North Korea at least twice a year.[33]

As was mentioned above, the *Shahab-3/Shahab-3D* was based on the North Korean *Nodong-1* and is the first missile that can reach Israeli territory.[34] It is also interesting that there are reports that Iran co-sponsored development of the *Nodong-1* missile in North Korea, and conducted negotiations on the purchase of 150 missiles in exchange for oil.

Foreign sources indicate that Iran began to produce missiles in 2001, but at first was using missile engines imported from North Korea.[35] The missile's range is on the order of 1,300 km,[36] its warhead mass is 1,000 kg,[37] and the *Shahab-3's* maximum error was estimated to be 0.08 percent of the distance flown, or about one kilometer, which would appear to be mistaken.[38] There are reports that Iran is also undertaking efforts to increase the range of the *Shahab-3* by 1,300-1,600 km. Furthermore, work on modernizing the *Shahab-3* is being conducted as an alternative to the development of the new *Shahab-4* missile, which was shut down in November 2003.[39]

In June 2005, a solid-fuel *Shahab-3* missile (according to the Iranian Defense Ministry) reached a distance of 2,000 km during a test launch, along with an increase in accuracy.[40] From the technical point of view, however, re-equipped *Shahab-3* with solid fuel actually appears to be a new missile. One should also note that in late 2004, Israel reported that the improved *Shahab-3/Shahab-3D*, with the help of a Chinese guidance system, had decreased the maximum error range to 250 m, which is clearly an exaggeration.[41] As of May 2004, 20 ballistic missiles were considered combat-ready.[42]

Modernization basically consists of converting the *Shahab* family of missiles to solid fuel. In May 2005, Iranian Minister of Defense Ali Shamhani announced that Iran had conducted a successful test of a solid-fuel engine for the *Shahab-3* ballistic missile. Furthermore, it was noted that "the use of solid fuel makes it possible to increase the missile's storage period and improve its accuracy."[43] Therefore, one cannot exclude the possibility that Iran has conducted tests for other missile families, or that Iran is developing a new solid-fuel missile that would represent a qualitative jump in its missile program. In any case, this event indicates that Iran intends to pay serious attention to the development of solid-fuel engines for intermediate-range missiles, which unavoidably places increased requirements on Iran's missile and chemical industries.

It should also be recognized that Iran has had combat experience using *Shahab* missiles since the Iran-Iraq war. As mentioned above, during the low-intensity conflict through 2001 between Iran and the opposition Muhajedin Khalq party (also known as the People's Muhajedin of Iran) based in the Iraqi border regions, the Iranian military launched 58-77 *Shahab* (of unknown modifications, but most probably *Shahab-1* and *Shahab-2*) ballistic missiles at enemy bases.[44] This was clearly due both to the limited ability of the Iranian air force to deliver retaliatory strikes at bases located on the territory of the neighboring state, as well as, probably, the desire to test the effectiveness of missiles assembled domestically through large-scale use in a real combat situation.

In the West, there have also been discussions about Iran's possible development of *Shahab-4* missiles, which are likely either the further development of Soviet *R-12* missiles (which is a rather far-fetched assumption, given that the last *R-12* was decommissioned in May 1990) or an improvement on the *Shahab-3* analogous to Pakistan's *Gauri-2.*[45] In fact, the first mention of the development of the intermediate-range *Shahab-4* missile was made by Israel in the mid-1990s; indeed, in 1997 Israeli experts noted the Iranian development of missiles with ranges of 5,500 and 10,000 km![46] According to information provided by Iranian opposition groups, the *Shahab-4* has a range of 2,000 km and a throw-weight of 1.4 tons.[47] However, official Iranian representatives have stated that the *Shahab-4* development program has been discontinued.[48] Moreover, as early as 2000 it was announced that the *Shahab-4* designation had been given to a space satellite launch vehicle.[49]

It is noteworthy that after yet another test of a *Shahab-3* in June 2005, Iranian Minister of Defense A. Shamhani stated that "The *Shahab-3,* which was tested using solid fuel, could be called the *Shahab-4*, however, in principle, the missile designation itself is not important."[50]

The charges that Russia helped the Iranian missile program are overstated. Iran received help on a considerably greater scale from North Korea—virtually all of the ballistic missile production infrastructure for the *Shahab* missile family was created by Iran with North Korean assistance. It is clear that this cooperation went in stages: first the purchase of complete missiles, then supply of components for assembly at Iranian enterprises, and finally assistance in mod-

ernizing missiles and organizing the production of new missiles types. It is quite possible that joint work will continue in future; furthermore, Iran may well take upon itself the funding of research and development work, something that has already occurred in the past. If the international situation sharply deteriorates, the supply of complete systems to Iran also remains possible.

In addition to the liquid-fueled *Shahab* missiles family, the Iranian missile arsenal also includes solid-fueled missiles: the Chinese *CSS-8* (called *Tondar-69* in Iran) and the *Fateh*. *Tondar-69* is an alteration of the Chinese copy of the Soviet "surface-to-air" *S-75* (the Chinese version is called *HQ-2* in the West), built in the PRC, turned into a "surface-to-surface" missile. The *Fateh A-110* is a relatively new missile, the existence of which was only officially announced in September 2002 when Tehran's official representatives declared the successful launch of a missile of this type.

According to available information, the *Fateh A-110* is single-stage missile with a range of 200 km, warhead mass of 500 kg.[51] According to official statements, Iran makes both the missiles and the solid-fuel engine for them independently, and has built a special plant for their construction.[52] The missile's maximum error, in the opinion of U.S. experts, is about 100 m.[53] The missile's one drawback is its fixed launcher, though Western experts believe that work on a mobile launcher for this missile is ongoing.[54]

The *Nazeat* missile family could be considered the "oldest" of those developed and produced in Iran. Work on this system began in the late 1970s; assistance was received from North Korea, China, and possibly even Brazil.[55] A significant number of types of this missile have been created. The *Nazeat N-5* and *N-6* were used in the war with Iraq. The maximum range of the *N-5* is 105 km, the *N-6* is 120-130 km, and the *N-10* is 150 km. The warhead mass of these types is 150 kg, though in the *N-8* this was increased to 300 kg (in the *N-10* warhead mass was once again reduced, to 250 kg, apparently to increase range).

It appears that Iran is also developing a solid fuel missile program based on the Chinese *M-11* (*DF-11/CSS-7*) and *M-9* (*DF-15/CSS-6*). The former reportedly has the Iranian designation *Tondar 68* or *Gadr*.[56] As it is related to Pakistan's *Ghazvani* missile, which flew 290 km during a test in 2002, it is likely that the Iranian version has a similar range. The *Tondar 68/Gadr* is apparently equipped with a 500 kg warhead that can separate during flight, which theoretically makes it more precise than the *Shahab-2*.[57] An important feature of the Chinese version of the *M-11* is its capability of being launched from a mobile launcher based on the *MAZ-543*, which, given Iran's possession of similar launchers, means that the *Tondar 68/Gadr* can likely be launched from them.

Reports indicating that Iran has been developing a second solid-fuel missile program on the basis of the Chinese *M-9* are fragmentary at best. Western analysts estimate that the Iranian version of the missile can deliver a 320 kg warhead a distance of 800 km.[58]

It would appear that the Chinese missiles will be developed in parallel with the improvement of the *Shahab* liquid-fueled missile. Given the situation with the North Korean nuclear program—Pyongyang has been threatened with virtually total international isolation since its test of a nuclear device—Iranian cooperation with North Korea may come to a temporary halt or become significantly more complicated. Therefore, it would not be surprising if the "Chinese" path were developed more dynamically. Moreover, intermediate-range solid-fuel missiles have been the core development choice in many countries of the world, including the new Chinese intermediate-range missiles and SLBMs.

In 2006, Iran's tests of the new *Saegheh* "surface-to-surface" tactical missile class were reported. In August 2006, Iranian televisions reported 10 test launches of new missiles at one of the military test sites, during the course of which a range of 80-250 km was achieved.[59] Other characteristics of the missile were not provided.

Table 1: **Main Specifications of Iranian Ballistic Missiles**

Name	Range, km		Mass, kg		Maximum	Type of
	Min.	Max.	missile	warhead	error, m	engine
Nazeat N-6 (*Iran 130*, *Mushak 120*)	unknown	105	unknown	150	unknown	solid
Nazeat N-8	unknown	unknown	unknown	300	unknown	solid
Nazeat N-10	unknown	150	unknown	250	unknown	solid
Zelzal-1	unknown	100-150	unknown	600	unknown	solid
Zelzal-2	unknown	350-400	unknown	600	unknown	solid
CSS-8 (*M-7*)	unknown	150-180	unknown	190	unknown	liquid
Shahab-1 (*SCUD-B*)	50	300	5862	989	450 –1000	liquid
Shahab -2 (*SCUD-C*)	55	700	6400	700	1000	liquid
Shahab -3 (*Zelzal-3*)	unknown	1300-1500	16000	760-1100	1000	liquid
Shahab-4	unknown	1800 – 2000	22000	750-1000	unknown	liquid
M-11	unknown	290	unknown	500	unknown	solid
M-9	unknown	800	unknown	320	unknown	solid

Figure 1. **Iran's Main Missile Production Centers**

Source: http://www.waronline.org/mideast/iran_wmd.htm

Note: centers for cooperation in the production of Iranian missiles:

- ❏ Isfahan: R&D, missile production, fuel production;
- ❏ Semnan: production of tactical missiles, test site;
- ❏ Shahroud: R&D, missile fuel, and test site;

- ❑ Shiraz: R&D, production of missiles and missile fuel;
- ❑ Sultanatabad, Lavizan: R&D;
- ❑ Kukh-e-Barjamali: production of measuring equipment for tests.

Sites of small enterprises involved in cooperation for the production of missiles:

- ❑ Abadan: missile production;
- ❑ Aliabad: missile launcher equipment;
- ❑ Arak: R&D, *SCUD* reequipping (modification) plant;
- ❑ Bandar Abbas: missile production;
- ❑ Dorud: R&D;
- ❑ Gamsar: test site;
- ❑ Gostaresh: R&D;
- ❑ Karaj: R&D, missile production;
- ❑ Khoramabad: missile production;
- ❑ Manzariyah: R&D, missile fuel production;
- ❑ Mashhad: missile production (missiles, solid-fuel engines);
- ❑ Okaraman: missile production (parts for the *Shahab*);
- ❑ Parchin: missile production (solid-fuel engines, guided air-defense missiles, anti-tank guided missiles, airborne missiles, parts for the *Shahab*);
- ❑ Sarji: missile production;
- ❑ Tebriz: missile production (*Shahab*);
- ❑ Tehran: R&D and missile production.[60]

Along with the development and production of its own missiles, Iran necessarily needs launchers for them as well. The 1991 military clash between neighboring Iraq and the coalition of predominantly western states clearly showed the strong and weak points of various types of launchers. Iraq used both mobile and stationary launchers to launch *SCUD* missiles, an inheritance of the Iran-Iraq war when the enemy did not pose a threat to them. The danger Iraq's ballistic missiles posed for its enemy is indicated by the fact that on the first day of Desert Storm, January 15, 1991, 11 percent of the targets were parts of the *SCUD* missile complex (the same proportion as air defense system targets; while command, communication, and control centers made up the greatest share of targets—16 percent; i.e. missiles and air defense were in second place as far as coalition priorities were concerned).[61]

During the first days of the war all stationary launchers were attacked, of which 12 were destroyed and 13 damaged.[62] However, the mobile installations, which were estimated to total 30-50, remained through the end of combat. Coalition air forces only managed to hit "facilities with characteristics similar to launchers"[63] eight times.

Iran obviously studied the Iraqi experience carefully; the issue of how to ensure launcher survivability is one of the most urgent for Iran. Iran has evidently bet on the use of mobile launchers; however, in the mid-1990s there were reports that Iran had built an underground bunker system for *Shahab* missiles on the banks of the Persian Gulf.[64] Western analysts believe that missiles launched from these bunkers could reach Oman, Qatar, and the United Arab Emirates (UAE).[65]

Nevertheless, it would seem that plans call for most of the missiles to be launched from mobile launchers. In the late 1990s, the number of launchers based on the Soviet *MAZ-543* and German-built trucks was estimated to be about 100.[66]

Iranian missile launchers will still, however, remain very vulnerable in the face of an enemy with a powerful air force. The example of Israel's campaign in Lebanon in July confirms this fact. According to information from Israel's AMAN military intelligence, at the beginning of combat actions the air force destroyed 59 Iranian *Zelzal-2* and *Fadjr* launchers.[67]

CRUISE MISSILES

Iran has had considerable success in the development and production of cruise missiles. True, here we are primarily talking about anti-ship missiles, but they could potentially be used against surface targets as well. The main Iranian surface-to-surface missile class is a local copy of the Chinese *CSSC-2 Silkworm (HY-1)* and *CSSC-3 Seersucker (HY-2).* Western sources indicate that in 1987 Iran began production of this type of missile with the assistance of the PRC and the DPRK, then later turned to production of improved models of their own design. It is also possible that while working on increasing the range of the *CSSC-2*, Iran made use of the Iraqi *FAW-150* and *FAW-200* cruise missiles, which are also based on a Chinese prototype.[68] The *CSSC-2* warhead weighs 400 kg, while the *CSSC-3* is 513 kg, which theoretically makes it possible to accommodate a nuclear device on the latter.[69] The Iranian version of the improved *CSSC-2* was designated *Piruzi-75*, but work on it ended in 1996 when all attention turned to producing more advanced models: the Chinese *C-801* and *C-802.* In 2004, Iran demonstrated yet another modification of the *CSSC-2* called the *Raad*, which reportedly carries a 500 kg warhead some 150-400 km.[70]

Work on the Iranian versions of the *C-801* (*Karus*) and *C-802* (*Tondar*) are believed to have begun in 1996. The *Karus* has a range of 40km, while *Tondar's* is 120 km. It has been noted that both missiles can not only be launched from ships, but also from mobile launchers for coastal defense.

The story of Iran's acquisition of Soviet *Kh-55* missiles is worth describing in detail. The new Ukrainian government has acknowledged that *Kh-55* cruise missiles were sold to Iran. According to some reports, 12 missiles were sold to Iran, while six KNO-120 ground equipment systems were sold to China (although according to other reports, there were six units sold to each country). These missile systems cannot be deployed on Iranian aircraft, even the "mythical" *Tu-22M* (more on this aircraft below), which were armed with *Kh-22* and *Kh-15* missiles.[71] The *Kh-55* can only be launched (moreover, only with a nuclear warhead) from a *Tu-95MS* or *Tu-160* strategic bomber, which at the present time are only present in the Russian arsenal. Thus, one can confidently say that the *Kh-55* that ended up in Iran can only be used for the study of Iranian experts. Furthermore, airborne delivery systems were transferred from Ukraine to Russia, reportedly together with the relevant *Kh-55* nuclear warheads.[72]

In late July 2005, the Iranian opposition came out with information that the Islamic Revolutionary Guards had mastered the production of the *Kh-55*.[73] It is rather difficult to evaluate the veracity of this information, since the announcements of the Iranian opposition are often false, but one cannot completely ignore the possibility that Iran has become capable of using the relevant technologies.

The *Kh-55* is a highly perfected weapon, despite the fact that development of the missile began in 1976 and the first one was officially commissioned in December 25, 1979 (the first to be produced via serial production was completed on February 23, 1981). With an official maximum error of 100 m, the Soviet air force was able to obtain results with a deviation of just 20-30 m, making it possible to characterize the *Kh-55* as a "high precision" weapon.[74]Its range is 2,500 km, and warhead is 410 kg. The missile is guided by an autonomous inertial navigational system (INS) with corrections based on the local geographical relief. The basic flight regime is at minimum altitude (50-100 m), following the lay of the land, at speeds of 500-700 km/hour.[75]

There is yet one more aspect of the Ukrainian *Kh-55* story worthy of note. Already in March 1978, a decision was made to develop series missile production at the Kharkiv Avionics Association (KhAPO). And although a decree on the cessation of *Kh-55* production at KhAPO and the transfer of equipment and parts to the Kirov Mechanical Plant was issued in December 1986, it is well known that the following March the plant completed 16 modernized *Kh-55SM* missiles for tests of the new missile system.[76]

Thus, one cannot exclude the possibility that the necessary specialists remained at the plant, as well as some of the equipment, parts, documents, etc., that would make it possible not simply to restore the units that remained in Ukrainian military storage, but also to use them, or parts remaining at the plant, to bring some *Kh-55* up to, for instance, the level of the *Kh-55SM*

(with an increased range). This would theoretically make it possible for Iranian experts to obtain access to the most advanced long-range cruise missile, and if there were exchanges with Pakistani missile experts, very interesting joint developments could be obtained.

One must assume that the missiles were unlikely to have been produced in their original form as strategic missiles. This is due both to Iran's lack of equipment to obtain a detailed "picture" of a potential opponent's targets for the INS as well as the lack of delivery systems with the precise navigation needed for the INS to work. Moreover, the special design features of the *Kh-55* (suspension with four spread-out attachment joints, instead of the traditional suspension from a single joint) require a special launcher, which Iran is unlikely to be able to develop.

But it is possible that the *Kh-55* could be used as a basis for the creation of a tactical cruise missile (like the Pakistani *Babur*) with a range of 500-600 km, which would have the key advantages of greater mobility, accuracy, concealment, and lower cost. Moreover, a smaller range would make it possible to increase warhead mass and, correspondingly, the likelihood that the missile will be equipped with a nuclear warhead.

AIRBORNE DELIVERY SYSTEMS

The Iranian air force has a large number of aircraft; however, only the third and fourth generation equipment meets minimum modern requirements: the U.S. *F-4* and *F-14* fighter planes, French *Mirage F-1*, and Soviet *Su-24MK* front-line bombers and *MiG-29* fighter planes. Of these, only the *F-4, F-1, Su-24MK* and *MiG-29* are of relatively high combat value; these vehicles can also be used against surface targets.

The *F.1 EQ-2* and *-4* modifications of the *Mirage F-1* have the greatest value as strike aircraft; they can be refueled in-flight, are equipped with the *Q-5* version of the *Cyrano-IV* radar, and can launch *AM.39 Exocet* anti-ship missiles. In all, 24 were flown to Iran, of which one was apparently lost in 2001.[77] These planes are theoretically capable of launching nuclear weapons, but only the *Q-5* modification, of which there are no more than ten, has real combat value as a strike aircraft.

The Iranian air force's main strike plane, the *F-4D/E Phantom II,* of which it has about 60-66 with about 30 in a combat ready state, is also worth noting.[78] Although the *F-4* was used as a strike plane by the Iranians in the Iran-Iraq war, and is considered to be the main airborne delivery vehicle developed by the Iranians, the aircraft, the most recent of which was delivered in 1977, cannot be viewed as an effective and prospective delivery vehicle, although its load capacity, range, and the relatively large number of *F-4s* make it theoretically possible to imagine its use as a nuclear weapons delivery system.

The *Su-24MK,* an airplane specially constructed to strike surface targets, has the greatest potential in this regard. Most of the aircraft of this type were obtained from Iran in an unusual way: during Desert Storm in 1991, when multinational forces were operating in Iraq, Iraq's air force transferred some of its most modern airplanes to neighboring Iran in order to avoid their destruction. It is remarkable that during this operation, not one of the 24 Iraqi *Su-24MK* that participated was hit. After the end of the war, Iran refused to return the airplanes to its former enemy. According to Western estimates, there are 24 *Su-24s* in Iran's air force, including those purchased in the Soviet Union and requisitioned from the Iraqis (in total, Iran had at most 22 Iraqi *Su-24MK* and 12 *Su-24MK* received directly from the Soviet Union).[79] These aircraft are in 72 squadrons based at the air station in Shiraz.[80]

The condition of the aircraft that remain in Iran is unknown. However, several experts believe that the aircraft could be brought back into a combat-ready state through the purchase of the necessary spare parts on the "black market."[81] It has been noted as well that the "Su-24MK could be an effective nuclear weapons delivery vehicle, which Westerners believe is being developed by Iran. The Su-24MK aircraft can be adapted for this purpose by domestic industry."[82]

Figure 2. **Iranian Air Bases**

Source: "Air Force, Iran," *Jane's Sentinel Security Assessment—The Gulf States*, November 22, 2004.

However, this picture is seriously altered by the portion of aircraft that are not combat-ready, in particular the *Su-24*, the state of which is not clear. If Iran succeeds in undertaking at least a major overhaul of the aircraft that were produced at the latest in the end of the 1980s, or at best the general modernization of their targeting systems, avionics and signals jamming equipment of the *Su-24* first and foremost, as well as the equipping of these planes with in-flight refueling systems, Iran will obtain a highly mobile, and therefore less vulnerable, delivery vehicle. Furthermore, it will be significantly more accurate than existing and prospective ballistic missiles.

Some sources also say that Iran acquired long-range *Tu-22M3* bombers from Russia or Ukraine.[83] One even finds the number of "Iranian" *Tu-22M* that were ordered: 12 units.[84] There are also reports that Iran "is seen as a potential purchaser" of *Tu-22M*.[85] However, it would seem that the actual implementation of any such initiative is quite far away. The Ukrainian *Tu-22M* are being destroyed in accordance with the bilateral U.S.-Ukrainian "Agreement Between the United States and Ukraine Concerning Assistance to Ukraine in the Elimination of Strategic Nuclear Arms and the Prevention of Proliferation of Weapons of Mass Destruction" signed on November 25, 1993. Of course, work only began in November 2002, but according to the agreement, by early 2005 17 *Tu22M2* and 14 *Tu-22M3* were to have been destroyed, and the Ukrainian air force would only have 20 aircraft, all in the 185th Heavy Bomber Regiment.[86] It should be noted that when the Soviet Union collapsed, there were about 100 *Tu-22M2/M3* remaining on Ukrainian territory.[87] In 1999, there were just 55 airplanes of this type in the Ukrainian air force.[88] Thus, theoretically, some of the 40 bombers that "disappeared" could have ended up in Iran, but the airplane is too large to be transferred to Iran unnoticed, in addition to which it is highly likely that the potential WMD delivery vehicles on the territory of CIS states have been under close U.S. attention; the

Americans would take the appropriate steps if there were an attempt to transfer the *Tu-22M* to Iran.

The "Russian trail" also seems fairly implausible. The example of the long negotiations between Russia and India over the lease of several *Tu-22M*, which never reached the final stages, testifies to this. The same thing happened with the prospective lease/sale of *Tu-22M* to China. In any case, a possible deal to transfer *Tu-22M* to Iran is not likely to happen before there is a similar deal with India.

It is theoretically impossible to deny the Iranian interest in this sort of system. After all, during the Iran-Iraq war Iraqi *Tu-22B* (the precursor of the *Tu-22M*) were actively used against Iranian targets, primarily in bombing Tehran, Isfahan, and Shiraz. However, along with the undoubted merits of long-range bombers, their deficiencies also became clear to the Iranians: the existence of just one airbase made the Iraqi *Tu-22B* very vulnerable to airborne attack which, as noted earlier, forced Baghdad to transfer its aircraft onto the territory of Saudi Arabia and North Yemen.[89] Consequently, if Iran were to acquire similar aircraft it would need to expand its airfield network and strengthen the airfields' air defense systems, making this system less attractive in terms of cost-effectiveness. Moreover, the prospects of even the *Tu22M3* in hypothetical strikes on targets in Israel or on U.S. bases in the Middle East are illusory, given the strong air defense systems and insignificant number of operational aircraft, as well as the absence of support systems (intelligence services, signals jamming equipment, etc.)[90] And the use of this sort of system to deliver free-falling bombs (including nuclear weapons) against other states in the region would seem to be superfluous.

On the whole, looking back at the story of the "Iranian" *Tu-22*, it would seem to be directed not so much against Iran as against Russia. It is quite possible that the entire uproar was due to U.S. fears of the possible "spread" of this powerful system from former Soviet states. In addition, this situation could also be used to prevent the export of *Tu-22Ms* from Russia to India (negotiations on supplying two to four to India have continued without success since the mid-1990s) or to China.

SEA-BASED DELIVERY VEHICLES

It is quite clear that the Iranian navy does not have the capability to deliver WMD to a target. This is due both to its lack of WMD delivery vehicles—such as missile cruisers, cruise or ballistic missile submarines (SSGNs and SSBNs), or navy fighter planes—and to the general obsolescence of the vehicles in the fleet that could potentially be capable of delivering this sort of weaponry. The only potential delivery system are the three Russian-built Project *877EKM* (NATO name *Kilo*-class) diesel submarines *Tariq, Nuur,* and *Yunez*. They are relatively new ships (commissioned by the Iranian navy in 1992, 1993, and 1996) that have a decreased noise level so that it is relatively difficult to detect them—an important factor for a potential WMD carrier. In their present configuration, boats of this type only have torpedoes and it is impossible to launch missiles, including anti-ship cruise missiles, from them. However, these boats can be modernized when they receive intermediate overhauls, to make possible the launch of the *Club/3M54* missile complex, which makes it possible to launch not just anti-ship cruise missiles, but also surface-to-surface *3M14* missiles. According to Western reports, there were plans to equip a submarine with either Chinese *YJ-1* or Russian *Alfa* anti-ship cruise missiles (currently known under the export name *Club*).[91]

Modernization of Iranian submarines along the lines of the Indian submarines of the same type, with the installation of the *Club* missile complex, would appear to be the most realistic and logical way to proceed. This has been indirectly confirmed by media reports that Iran is interested in having its three submarine equipped with this complex.[92] The *3M14* missile can be used to strike ground-based targets. The missile's range is 300 km. It uses an inertial guidance system with corrections from the GPS/GLONASS navigational system.[93] Of course, available evi-

dence suggests that the *3M14* missile has yet to enter series production, and there is no talk yet of equipping ships or submarines with them.[94]

This assumption was indirectly confirmed in July 2005 when Russia's Rosoboronexport and Iran conducted negotiations on the repair and modernization of Iranian submarines at the Second International Naval Salon in St. Petersburg. Analysts believe that each boat will have certain equipment replaced, and a *Club-S* anti-ship cruise missile system will be installed. There will be a separate contract signed for the modernization of each submarine, which will cost an estimated $80-90 million apiece. Initially it was thought that this work would be conducted at Zvezdochka Shipyard in Severodvinsk, but St. Petersburg's Admiralty Shipyard, which had originally built the three diesel submarines for Iran, also competed for the contract.[95] It seems that Zvezdochka probably won the contract, since in April 2006 there was an announcement that experts from this yard visited Iran's shipyard in Bender Abbas, where they familiarized themselves with "the possibilities for conducting an intermediate overhaul on a Project 877EKM diesel-electric submarine."[96]

It is quite likely that some work has been carried out on the submarines: in August 2006 Iranian television showed video clips of the underwater launch of Iran's new *Thaqeb* missiles. However, Western analysts have cast doubt on the validity of these clips.[97] Nonetheless, the very fact of such an action by the Iranians indicates that Iran views its diesel submarines as a missile carrier.

The cost of modernizing all three boats in this manner, though, could be a significant burden on the Iranian navy's budget. It is therefore unlikely that all three boats would be modernized simultaneously.

SO WHY DOES IRAN NEED MISSILES AND WHAT DOES THIS MEAN FOR RUSSIA?

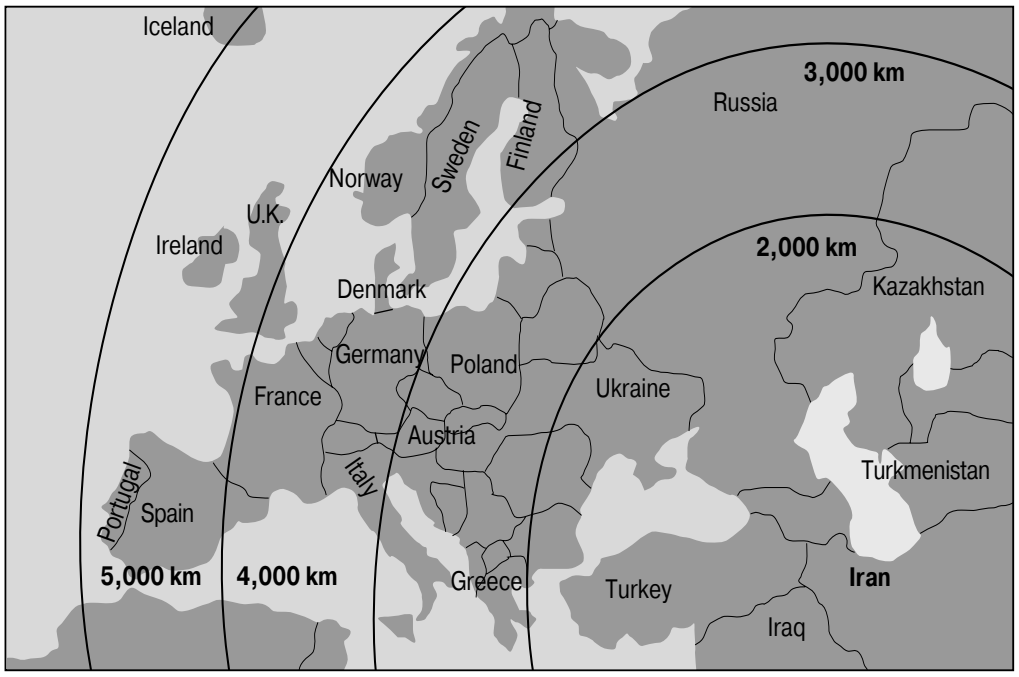
At present, the main and most likely means of delivery for a potential Iranian nuclear weapon is the *Shahab*. This is due to the fact that at present ballistic missiles are the only type of long-range weapon against which a country can not build a defense that guarantees its protection. Ballistic missiles' ability to ensure that its warhead is delivered to a target makes this class of weapon quite attractive to regional powers. Iran is no exception here.

Iran has succeeded in establishing a diverse arsenal of tactical and intermediate-range missiles that give Iran's leaders significant decisionmaking flexibility. As was noted above, the "long arm" of the Islamic state can only be exercised today via the *Shahab* missile. It can simultaneously lift several hundred tons of explosive and, possibly, WMD, and bring it down on an enemy up to 1,500 km away from Iran's borders. The *Shahab's* range makes it possible to cover:

- ❑ Targets within 300 km: Baghdad, Kuwait, Bahrain, and Qatar;
- ❑ 600 km: western parts of Iraq and southern Turkey;
- ❑ 1,000 km: Riyadh, Damascus, Amman, and Kabul;
- ❑ 1,200 km: Tel Aviv, Ankara;
- ❑ 1,500 km: Cairo, Delhi, Mumbai;
- ❑ 2,000 km: Kiev, Moscow, Athens;
- ❑ 3,000 km: Berlin, Rome.

However, these numbers indicate the maximum casualty radius, if calculating from Iran's borders, which is improbably given the increased vulnerabilities launchers would face there. If one assumes that the launches will come from internal parts of the country, then a ballistic missile with a range of 800 km can strike the whole of Iraq; one with a range of 1,000 km can hit the states of the Persian Gulf, southern Turkey, Afghanistan, Jordan, and Syria; 1,500 km includes Israel and Turkey; and 2,000 km Egypt and western India.

Figure 3. **Range of Missiles Launched from Northeastern Iran**



The missile arsenal Iran has today allows it to check nearly the entire Middle Eastern region, including Israel, Central Asia, and Turkey, which would appear to be enough to deter Israel in particular, as well as to threaten U.S. bases in the region (in Iraq, Afghanistan, Qatar, and Saudi Arabia).

However, the missiles' lack of high-tech features makes it impossible to count on destroying pinpoint targets, and instead to its use as a weapon of fear against civilian targets and large areas, such as large bases, storage facilities, and cities, while large-scale use would make it possible to "trample" even Israeli anti-missile defense or U.S. theater missile defense. However, there do not appear to be a large number of *Shahab-3* missiles that can reach Israel, which theoretically increases the chance of missile defense systems destroying all of their targets.

Another important shortcoming of Iran's liquid fuel missiles is the relatively long preparatory period needed to service them before launch (one-two hours), which increases the vulnerability of the missiles and slows down reaction time. It was apparently the realization of this fact that led to the initiation of alternative, solid-fuel missile programs based on Chinese technologies.

Furthermore, it seems that the North Korean reserves and assistance, used to iron out production of the *Shahab-1, Shahab-2,* and *Shahab-3*, are becoming exhausted, since the Korean technology, to the best of our knowledge, does not allow for a qualitative leap in areas such as increasing accuracy and range. Cooperation with China in these areas would not seem irrational.

The reasoning behind the Iranian missile program is quite interesting. Tehran has succeeded in creating and initiating series production of various missile types, making it possible to use them "step-by-step," depending on the degree to which a potential conflict has escalated, and not employ the *Shahab* missiles, which are expensive and of which there are not many, when it is not justifiable.

Further, if Iran succeeds in developing missile production on its territory, it may become a new global supplier of inexpensive missile technologies as well as of the missiles themselves. Iran's role in this regard may grow if it takes "decisive measures" towards North Korea and/or the unification of the two Koreas. In future, Iran could certainly become the regional supplier of missiles for states in the Middle East and Africa. The first indication of this could be the unconfirmed report of the delivery of ballistic missiles from Iran to Sudan in 1996, though it has been refuted by both countries.[98]

The recent conflict in Lebanon is a telling example of the use of mobile launchers: a significant number of unguided solid-fuel missiles of varying ranges were launched against Israel. The large-scale use of these weapons had a strategic effect, since the normal functioning of Israeli border regions was evidently paralyzed. According to official sources, in 33 days of combat Hezbollah's missile brigades launched 3,970 missiles, killing 41 innocent civilians.[99] The intensity of the strikes on average comprised about 120 missiles per day. Moreover, it became clear that the launchers practically could not be destroyed from the air, and it was quite complicated to "catch" them during ground operations. In all, according to official Israeli data, 126 launchers were destroyed.[100]

According to Israeli sources, the Hezbollah arsenal includes the following unguided missiles produced in Iran: *Falak-1, -2* (with ranges of 10 and 11 km, respectively), *Fadjr-3* and *Fadjr-5* (with ranges of 43 and 75 km, respectively), *Nazit-6* (90 km), *Zelzal-1* (150 km), and *Zelzal-2* (400 km).[101] The latter, as far as can be judged, had not been used in combat, though were the *Zelzal-2* to be launched from Hezbollah-controlled territory in Lebanon it would reach practically all of Israel. In fact, though, the *Falak* and *Fadjr* missiles were used in bulk. Their warheads vary from 50 kg (*Falak-1*) to 90 kg (*Falak-2* and *Fadjr-5*). In other words, on average 8.4 tons of explosives fell on Israel each day, comparable to the total mass of the 8-12 *Shahab-1-3* warheads.

Clearly were more powerful missiles like the *Nazeat* (with a 240-430 kg explosive charge, depending on the version of the missile) or *Zelzal* (600 kg warhead) to be employed, this number would increase considerably.

Thus, Iran already possesses what is essentially a *substrategic* weapon to use against Israel. However, this requires maintaining control of the borderlands near Israeli territory, making southern Lebanon analogous to Cuba when intermediate-range Soviet missiles were based there. Thus an expansion of the "security zone" under the control of U.N. forces or Israeli forces will decrease the effectiveness of most of the light Iranian projectiles; however, to balance the threat of heavier systems with greater ranges the occupation of a significant part of Lebanon would be needed, which is not acceptable to the international community.

In addition, the presence of Iranian tactical missiles in Lebanon makes the following scenario possible. If there is a confrontation with Israel, the large-scale use of long-range projectiles* and shorter-range intermediate-range missiles (SRINF) from Lebanese territory against well-known air defense weapons and Israeli air defense could lead to the mass use of *Shahab-3* ballistic missiles against strategic targets and facilities. If this were to happen, the ability of Israeli air defense to intercept all of the missiles is unclear.

Finally, the changed circumstances in Iraq should also be noted. It appears that in 2003-04 there was a sharp decrease in the Iranian missile program's development of new long-range missiles. Probably the Iranian missile industry was concentrating on improving the *Shahab-3* missiles in terms of accuracy, reliability, and operational characteristics. As a result of the U.S. invasion of Iraq, U.S. troops themselves have come very close to Iran's borders, putting them in the range of many Iranian tactical missiles. Thus, there are currently about 12 large permanent U.S. bases in Iraq that are located practically in a straight line through the country's central regions.[102] In total, there are about 130,000 U.S. troops in Iraq today, the majority of whom are carrying out operations in the Shi'ite parts of the country that border Iran and are therefore within the range of Iranian "substrategic" missiles. It is possible that Iran might provoke an armed conflict in the Iraqi borderlands, among other things, to "draw in" U.S. troops, bringing them within reach of less long-range systems.

Under this scenario, the U.S. contingent would become a virtual hostage to U.S.-Iranian relations and far more vulnerable than U.S. bases in the Persian Gulf region and U.S. territory itself. Further, those who would be hit by Iran's tactical missiles would be military servicemen, making it possible to avoid blame for striking innocent civilians in the case of a strike. Accordingly, fairly simple and cheap systems could be used to strike the United States, making it possible for Iran to concentrate on enhancing *Shahab-3* missiles and gradually improving its characteristics. This hypothesis fits well into the basic postulates of Iranian military doctrine: deterring possible aggression by causing a potential aggressor to pay the maximum possible price for its actions.[103]

Iran's experience testifies to the fact that the mass use of ballistic missiles against civilian targets does not lead to the desired effect, while the large-scale use of missiles in today's world is extremely expensive (according to some sources at the end of the "war of the cities" Iran was left with just 20 *SCUD-B* missiles).

Hence, it logically follows that Iran's missile arsenal today, when conventionally equipped, is chiefly for use as part of a fear tactic, aimed primarily against civilians or a potential enemy's large military facilities. In order to increase its effectiveness there must be investment in the modernization of existing missiles, firstly in increasing accuracy and secondly, and to a lesser extent, in increasing range, which is very expensive in terms of both time and money. One cannot exclude the possibility of a compromise solution, where the missiles' "bludgeon" is augmented by the "foil" of aircraft; the only candidate for such a role in the Iranian air force is the *Su-24*. However, in this case Iran would have to expend significant funds not so much for modernization, as for simply performing routine repairs on the aircraft. But if this were done, Iran's arsenal would then have a substrategic means of WMD delivery with increased accuracy, and if in-flight refueling capabilities were added (like those on the Soviet/Russian *Su-24M*) then the range would increase still further.[104]

The prospects for intermediate-range missiles, strategic cruise missiles, and long-range bombers appear quite distant, primarily due to the significant costs of such systems, as well as the completely different technological level required for their development, production, and use. All things considered, it appears that promising R&D on this sort of system is being undertaken (primarily on cruise missiles and intermediate-range ballistic missiles); the Iranian arsenal may even come to include such high-tech systems as the Russian strategic *Kh-55* cruise missile.[105] From time to time there are reports of Iran's development of a space delivery system; however, practical results have not been achieved to date, which is indirectly indicated by the contract signed with Russia in early 2005 to launch an Iranian satellite.

Moreover, we are not talking about the possible presence of *Tu-22M* long-range bombers in Iran. The appearance of this sort of equipment in Iran would not go unnoticed, and there is not even a theoretical possibility that they could have been obtained from Ukraine, to say nothing of Russia.[106] Given the enormous cost of operating this type of equipment, it would seem that Iran simply does not need them, if judged on the basis of cost effectiveness.

Thus, Iran's only practical means of WMD delivery is the *Shahab*, of which the most recent modification, the *Shahab-3* poses the greatest threat. It is important to realize that Iran has broad experience in the operation of this type of missile; they were mastered by Islamic Revolutionary Guard units and apparently have been cured of all of the "children's ailments" faced by the *Shahab-1* and *-2*. It would seem that these are likely to be replaced by the *Shahab-3* ballistic missile in the near future as well as, most likely, solid-fuel missiles.

In analyzing potential delivery systems, one must consider not just the existence of one system or another in arsenals or even in series production, but also the system's ability to lift and deliver a nuclear charge to a target. It is nearly impossible to estimate the mass and dimensions of an Iranian nuclear warhead, but several Western analysts have surmised that they are to a large extent based on Chinese projects obtained through the A.Q. Khan network, and likely weigh 1-2,000 pounds (450-900 kg).[107] At present this weight can be carried by the Iranian delivery systems noted in Table 2.

Table 2. **Means for the Delivery of Nuclear Weapons Capable of Carrying Warheads Weighing at Least 500 kg.**

Name	Range, km Min.-Max.	Weight, kg missile	Weight, kg warhead	CEP, m	Engine type
		Solid fuel Ballistic Missiles			
Zelzal-2	350–400	No information	600	No information	Solid fuel engine
		Liquid Fuel Ballistic Missiles			
Shahab-1 (*SCUD-B*)	50–300	5,862	989	450–1,000	Liquid fuel engine
Shahab-2 (*SCUD-C*)	55–700	6,400	700	1,000	Liquid fuel engine
Shahab-3 (*Zelzal-3*)	1,300–1,500	16,000	760-1,100	1,000	Liquid fuel engine
Shahab-4	1,800–2,000	22,000	750–1,000	No information	Liquid fuel engine
		Cruise Missiles			
CSSC-2	85	2,300	400		turboprop
CSSC-3	95	3,000	513		turboprop
Raad	150–400	No information	500		
		Bombers			
Su-24MK	950 km with a payload totaling 2,500 kg 1,050 km with a payload totaling 3,000 kg and two auxiliary tanks		Maximum weight of individual bomb: 1,500 kg		

Thus, we see that at present there are two types of ballistic missiles and front-line *Su-24MK* bombers that could be considered substrategic nuclear weapons delivery vehicles, if Iranian physicists are able to decrease the size of potential nuclear charges and ensure that their weight is no more than 1,000 kg. If the mass of the nuclear charges can be further decreased, then the spectrum of means of delivery is considerably increased. However, this would seem to be likely only in the very distant future; that is, only the *Su-24MK* and *Shahab-2* and *Shahab-3* can be considered realistic delivery vehicles at this point in time. Moreover, the bombers could be used for pinpoint strikes, while the ballistic missiles would be used as a means to frighten and deter primarily neighboring Arab states and Israel with the possible use of WMD. The basic question remains: how capable is Iranian technology of creating a warhead suitable for use on a ballistic missile, in terms of mass and dimensions? One should remember that in the recognized nuclear weapon states, the first nuclear delivery systems were bombers. It is difficult to assess the cases of Israel, India, and Pakistan, since there is no detailed information on their nuclear warheads, but it is impossible to completely exclude the possibility that they have placed their warheads on missiles.

Iran's missile program does not threaten Russia at present. It would seem that Iran was never the target of Soviet/Russian strategic nuclear forces (like North Korea, which has a substantially more advanced missile program while that nation shares a border with Russia).[108] If Iran obtains nuclear weapons and intermediate-range missiles, it would seem that the main deterrent force will nonetheless primarily be airborne delivery systems: strategic and long-range aviation as well as the *Su-24M, M2 and Su-34* tactical bombers.

CONCLUSION

It follows from the above analysis that Iran's missile and nuclear programs are not synchronized. Iran's missile program is developing according to its own internal logic. The "intersection" of the nuclear and missile programs, of course, is possible—not at present, but in the future, and of course only if Iran is really striving to obtain a nuclear bomb (which is not the subject of this article)

Given the complex negotiations on the Iranian nuclear program, the combination of these two issues could considerably harden the Iranian position and is therefore not advisable.

Notes

[1] The research for this paper was conducted as part of a project funded by the U.S. Institute of Peace.

[2] Duncan Lennox, "Iran's ballistic missile projects: uncovering the evidence," *Jane's Intelligence Review,* June 1, 1998.

[3] "Iran's war of the cities' experience," *Ballistic Missile Proliferation*, March 2000.

[4] Ibid.

[5] Duncan Lennox, op. cit.

[6] Data cited from "Free Rocket Over Ground (FROG) artillery rocket system (Luna-M)," *Jane's Armour and Artillery,* January 21, 2004; "SS-1 'Scud' (R-11/8A61/8K11, R-11FM (SS-N-1B) and R-17/8K14)," *Jane's Strategic Weapon Systems*, July 28, 2004; "SS-21 'Scarab' (OTR21/9M79 Tochka)," *Jane's Strategic Weapon Systems*, July 28, 2004.

[7] Yu. Nenakhov, *The "Miracle weapons" of the Third Reich* (Minsk: Harvest, 1999), p. 575.

[8] "Iran's war of the cities' experience," op. cit.

[9] Ibid.

[10] Ibid.

[11] Robin Hughes, "Iran's ballistic missile developments—long-range ambitions," *Jane's Defense Weekly*, September 13, 2006.

[12] "Iran's war of the cities' experience," op. cit.

[13] Duncan Lennox, op. cit.

[14] The majority of Iran's military industrial facilities and densely populated regions are within 400 km of the Iran-Iraq border, and thus within range of Iraqi-built *SCUD* and *Al-Hussein* missiles.

[15] "Procurement, Iran," *Jane's Sentinel Security Assessment—The Gulf States,"* November 24, 2004.

[16] Ibid.

[17] Robin Hughes, op.cit.

[18] "'SCUD-B' variants," *Jane's Strategic Weapons Systems*, June 15,2004.

[19] "Offensive Weapons—Unclassified Projects, Iran," *Jane's Strategic Weapons Systems*, January 26, 2005.

[20] "'SCUD-C' variant (Hwasong 6) and 'SCUD-D' variants (Hwasong 7)," *Jane's Strategic Weapons Systems*, June 15, 2004.

[21] "Offensive Weapons—Unclassified Projects, Iran," op. cit.

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[23] Ed Blanche Ed, "Iran claims missile self-sufficiency," *Jane's Missile and Rockets*, January 1, 1999.

[24] "Procurement, Iran," op. cit.

[25] Paul Beaver, "Iran's Shahab 3 IRBM 'ready for production,'" *Jane's Missiles and Rockets*, June 1, 1998.

[26] Ibid.

[27] "Shahab 3/4," *Jane's Strategic Weapon Systems*, June 15, 2004.

[28] Ibid.

[29] Ibid.

[30] Ed Blanche, "Iran puts Shahab 3 into service," *Jane's Missiles and Rockets*, September 1, 2003.

[31] Ed Blanche, "Iran forms five units for Shahab ballistic missiles," *Jane's Defense Weekly*, July 12, 2000.

[32] Ed Blanche, "Shahab 3 ready for service, says Iran," *Jane's Missiles and Rockets*, August 1, 2003.

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[34] http://www.waronline.org/mideast/iran_wmd.htm.

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[37] *Jane's Missiles and Rockets*, February 1, 2004.

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[39] "Procurement, Iran," op. cit.

[40] "Iranian Ministry of Defense head announced that recent test of Shahab-3 missile is of an exclusively defensive nature," *RIA Novosti*, June 8, 2005.

[41] Ed Blanche, "Iran claims Shahab 3 range now 2000 km," *Jane's Missiles and Rockets*, November 1, 2004.

[42] "Shahab 3/4," op. cit.

[43] Alon Ben-David, "Iran tests solid-fuel engine for Shahab 3," *Jane's Defense Weekly*, June 8, 2005.

[44] "Why Iran fired Scuds at Iraq," *Foreign Report*, June 28, 2001.

[45] Duncan Lennox, *Jane's Defense Weekly*, September 8, 1999.

[46] Andrew Rathmell, "Iran's missiles come under fire," *Jane's Intelligence Review*, December 1, 1997.

[47] Ed Blanche, "Iran enhances existing weaponry by optimizing Shahab 3 ballistic missile," *Jane's Missiles and Rockets*, February 1, 2004.

[48] Ibid.

[49] Ed Blanche, "Iran forms five units for Shahab ballistic missiles," *Jane's Defense Weekly*, July 12, 2000.

[50] "Iranian Ministry of Defense head announced that recent test of Shahab-3 missile is of an exclusively defensive nature," op. cit.

[51] "Fateh A-110," *Jane's Strategic Weapons Systems*, June 15, 2004.

[52] "Procurement, Iran," op. cit.

[53] Duncan Lennox, "Short-range Iranian ballistic missile on view," *Jane's Defense Weekly*, February 5, 2003.

[54] Ibid.

[55] "Offensive Weapons—Unclassified Projects, Iran," *Jane's Strategic Weapons Systems*, January 26, 2005.

[56] Ibid.

[57] Ibid.

[58] Ibid.

[59] "Iran conducts tests of new tactical missile," *Jane's Missiles and Rockets*, October 1, 2006.

[60] "Iran's unconventional weapons and missiles," <http://www.waronline.org/mideast/iran_wmd.htm>.

[61] Dmitri Fomin, "The hunt for 'Scuds'," *Voyenno-promyshlennyy kur'er* (Military Industry Courier), December 14-20, 2005.

[62] Ibid.

[63] Ibid.

[64] Harold Hough, "Iran targets the Arabian Peninsula," *Jane's Intelligence Review*, October 1, 1996.

[65] Ibid.

[66] Duncan Lennox, "Iran's ballistic missile projects: uncovering the evidence," *Jane's Intelligence Review*, June 1, 1998.

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[68] "Offensive Weapons—Unclassified Projects, Iran," op. cit

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[70] Ibid.

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[72] Viktor Markovskii and Konstantin Perov, "Aviation cruise missiles," *Aviation and Cosmonautics*, No. 9, 2005, p. 55.

[73] "NCRI: New Accusations against Iranian missileer," *IranAtom.Ru*, <http://www.iranatom.ru/news/aeoi/year05/august/x55.htm>, last accessed April 20, 2007.

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[75] Markovskii and Perov, "Aviation cruise missiles," op. cit., p. 53.

[76] Ibid.

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[79] "Air Force, Iran," *Jane's Sentinel Security Assessment—The Gulf States*, November 22, 2004.

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[83] "Air Force, Iran," op. cit.

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[85] "The Russian Air Force's Combat Aircraft," *Aviation and Cosmonautics*, No. 8, 1999, p. 4.

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[87] Estimated from data in A.G. Lenskii and M.M. Tsybin, *Voyennaya aviatsiya Otechestva. Organizatsiya, vooruzheniye, dislokatsiya (1992/2000 gg.)* (Our National Military Aviation: organization, armaments, and locations, 1992-2000) (St. Petersburg, 2004).

[88] "The Russian Air Force's Combat Aircraft," op. cit.

[89] Ibid.

[90] One should remember that according to available information, the talks with India on the lease of the Tu-22M3 involve two to four aircraft, which they plan to use at sea as anti-ship cruise missile carriers as well as long-range reconnaissance aircraft.

[91] "Submarines, Iran. Kilo class (Project 877 EKM) (SSC)," *Jane's Fighting Ships*, February 17, 2005.

[92] "Procurement, Iran," op. cit.

[93] "SS-N-27 (3M14/3M54/91R1/91R2 Club)," *Jane's Strategic Weapon Systems*, July 24, 2004.

[94] Ibid.

[95] Ibid.

[96] Andrei Frolov, "The Zvezdochka Machine Building Plant," *Eksport vooruzhenii* (Arms Exports), No.4, 2006, p. 54.

[97] "US scoffs at Iranian sub-launched missile 'test'," *Jane's Missiles and Rockets*, November 1, 2006.

[98] "Shahab 1 (SS-1C ''Scud B' variant)," *Jane's Strategic Weapon Systems*, June 23, 2006.

[99] Official Israeli data as cited in: Alon Ben-David, "Israel introspective after Lebanon offensive," *Jane's Defense Weekly*, August 23, 2006.

[100] Sergei Vey, "Israel after the Lebanese offensive," *Army Guide*, September 26, 2006. <http://www.army-guide.com/rus/article/article.php?forumID=702>, last accessed April 20, 2004.

[101] "Hezbollah as a strategic arm of Iran," Intelligence and Terrorism Information Center at the Center for Special Studies, September 8, 2006.

[102] According to data in: *The Friends Committee on National Legislation*, <http://www.fcnl.org/iraq/bases.htm >, last accessed April 20, 2004.

[103] As cited in Michael Knights, "Iran's conventional forces remain key to deterring potential threats," *Jane's Intelligence Review*, February 1, 2006.

[104] The range with a normal warhead load of 1 ton is 600 km, which can be compared to the range of the *Shahab-2*, which has a 700 kg warhead and maximum error of 1 km. The maximum weapons load of a *Su-24* is 7 tons.

[105] Andrei Chernikov, "Ukraine writes off Soviet missiles for Leonid Kuchma," *Kommersant*, February 19, 2005.

[106] All Belarusian *Tu*-22M were transferred to Russia in the early 1990s.

[107] Michael Knights "US long-range planners focus on containment of a nuclear Iran," *Janes's Intelligence Review*, September 1, 2005.

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DEBATING RUSSIAN DEMOGRAPHIC SECURITY: CURRENT TRENDS AND FUTURE TRAJECTORIES

President Putin in his annual 2006 address to the Federal Assembly argued that demographic decline was Russia's most acute problem.[1] He also instructed Igor Ivanov, then the secretary of the Security Council, to focus on the three main threats to Russia: "First, technological breakdown problems, the threat of a possible technological breakdown. Second, the threat related to unfavorable demographic developments, and third, the threat in the sphere of national security, defence issues primarily."[2] The importance of the issue as a priority, even amongst other pan-Federation projects, was evidenced by Putin's initiative in June 2006 to rename the *Council on National Projects* to the *Council on National Projects and Demographic Policy* (officially the Council for the Implementation of Priority National Projects and Demographic Policy).[3]

Other elite figures have also noted the demographic crisis through the prism of state security. Putin's representative to the Far Eastern Federal Distinct, Kamil Iskhakov, has stated that for Russia to successfully modernize "we have to stop the outflow of population" as over the last 15 years the population of the Far East has reduced by 20 percent "due to migration and the imbalance of birth and death rates."[4] Vasiliy Smirnov, the deputy head of the General Staff, noted the military-security consequences of demographic decline as the conscript recruitment pool diminishes by 100,000 new recruits each year.[5] Party political representatives have tended, perhaps as befits politicians, to dramatize the demographic crisis, describing it in apocalyptic terms: an "extraordinary demographic crisis" and a "demographic catastrophe." Federation Council Chairman Sergei Mironov, leader of Russia's Party "Fair Russia" (whose platform is based on resolving the demographic crisis), noted that Russia might have only 52 million people by 2080 if urgent measures are not taken. Communist Party of Russia leader Gennady Zyuganov has stated that "the country is losing its population. It has lost 10 million people in 15 years, of whom nine million are Russians. The preservation of the people is such a crying problem that it cannot be avoided."[6] Patriarch Alexei II has also joined this chorus of concern, stating: "We are living in the days where the death of our people has begun."[7]

This article briefly examines the relationship between demographic decline, the associated migration changes within the Russian Federation and how this impacts on Russian stability. It identifies the effects of demographic decline on political processes and socioeconomic conditions in Russia and demonstrates their security implications and consequences. It concludes by proposing policy recommendations to better manage demographic decline by

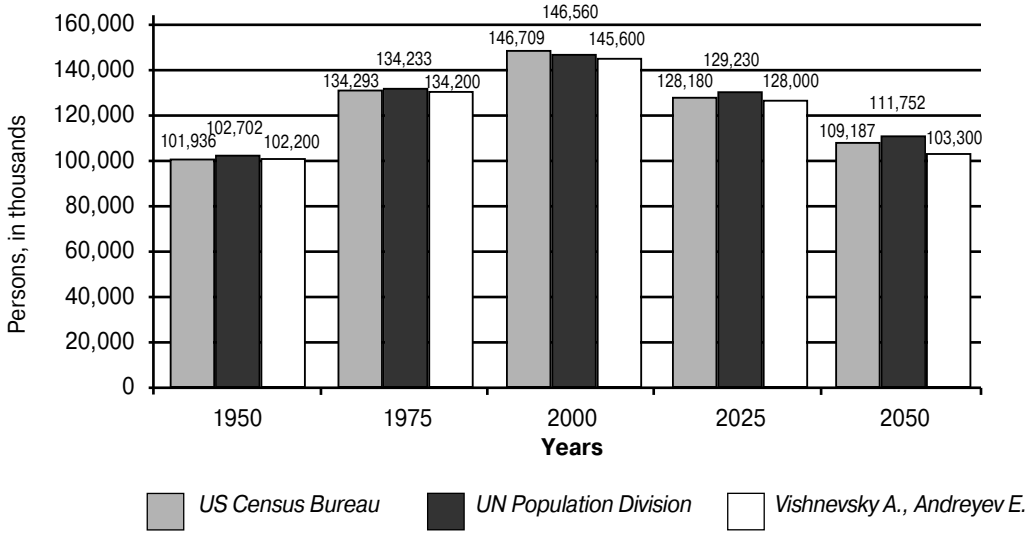
countering the worst effects of the destabilizing security dilemmas that arise within and between the political, economic, and societal security sectors.

DEMOGRAPHIC DYNAMICS

Putin has noted that "profound demographic studies" are not yet being conducted in Russia, even though "we do need this systemic information."[8] The Russian October 2002 census results have confirmed trends already anticipated by many demographers. According to the U.S. census bureau, Russia's population is set to fall annually by 400,000 and thus 10 million by 2025.[9] The UNDP calculates the annual decline at 840,000 or falling by 21 million by 2025, a quarter—or 31 million—by 2050.[10] The Russian population dropped by 4,371,200 between 1992 and 2002—"the natural decline of the population was 7,399,800, a decline of 5 percent from the 1989 to the 2002 census: this figure consisted of 20,540,000 births and 27,939,800 deaths."[11] The Russian population is declining fast, by an estimated 700-750,000 people each year. Between January and July 2006, for example, the Russian population fell by more than 380,000, to 142.4 million.[12] Russia's Economic Development Ministry's socioeconomic development forecast for 2006-2009 reports that by 2009 Russia's population will have fallen to between 140.4 and 140.7 million.[13]

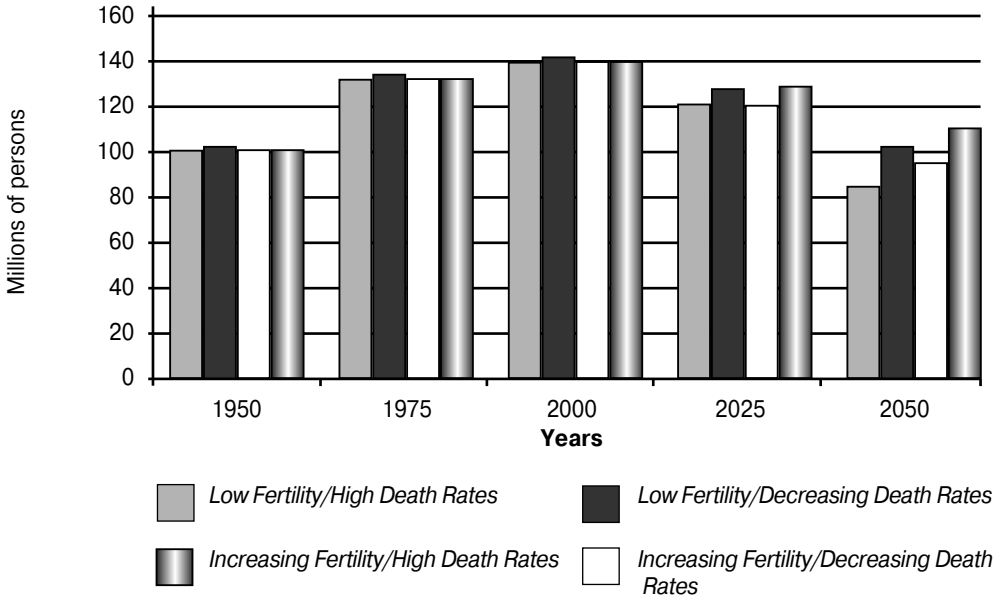
In projecting Russian population levels between 1950 and 2050 (see Figure 1 below), it is interesting to note that although the United States Census Bureau and the United Nations Population Division provide estimates, neither the Federal Service of State Statistics (Rosstat) or, as far as we know, any other official Russian projections for that time period are provided. However, there are a few studies (most of them generally covering the period until 2020) that have been undertaken by Russian specialists. Anatoly Vishnevsky and Evgeny Andreyev, for example, provide a survey and projection from 1950 to 2050.[14] In one calculated projection for 2000-2050 they do not take into account a possible positive migration growth, thereby allowing us to view clearly the impact of migration on Russian demographic trends. Vishnevsky and Andreyev's final figure for total Russian population by 2050 is 103.3 billion (with low fertility and decreasing death rates and zero migration growth), while those of the U.S. Census Bureau and the United Nations are higher by approximately 10 million.[15]

Figure 1. **Population Prospects, 1950–2050**[16]



Vishnevsky and Andreyev (see Figure 2, below) also suggest that only with increasing fertility and falling death rates do their projections approximate those of the United Nations or U.S. Census Bureau estimates.

Figure 2. **Population Projection Given Zero Migration Growth**[17]

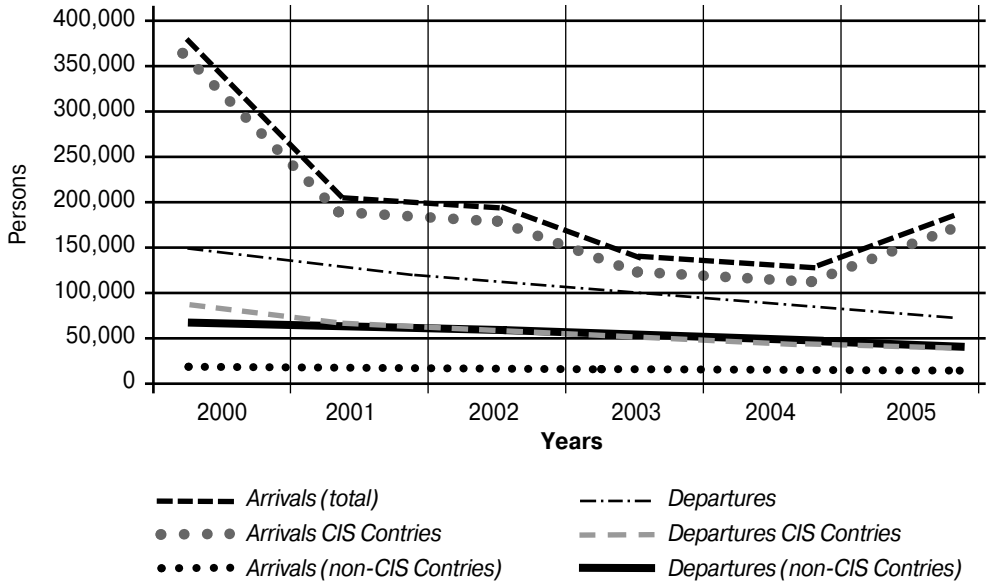


The Center for Demography in Moscow reported 793,000 more deaths than births in 2004. In 2004 the average birth rate in Russia stood at 132 live births per 100 women of child-bearing age (between 15 and 49 years) "and this is insufficient to ensure even the simple reproduction of the population."[18] In 1986-87 the fertility rate was 2.19 births per woman, this fell to 1.17 in 1999 and rose to 1.34 in 2006, but 2.14 births per woman is still needed to allow for the mere reproduction of the population. In 2006 Yekaterina Lakhova, the chair-woman of the State Duma Committee for Women's Affairs, reported that almost half of Russian families are childless: "What's the Russian family like today? It's mainly childless. In almost half of families (out of 41 million families) there aren't any children at all."[19] While birth rates have been consistently falling for more than two decades, a number of longer-term factors, not the least of which is poor health conditions, have brought about an increase in the death rate. Between 1989 and 1994, life expectancy for Russian men fell by more than six years and the gender gap in mortality is startling: by 2006 Russian women were living to 72 years on average, men to just 59 years. If these trends are not reversed or offset by mass immigration, by 2050 the Russian population will have fallen by 50 million, taking it below 100 million.[20]

Migration to Russia of ethnic Russians and Russian-speaking populations from outside the Russian Federation fails to compensate for the natural decrease in the population, though experts and specialists admit that exact figures are lacking.[21] Basic trends are, however, clear. In Figure 3 we can see that there is a marked decrease in the total annual number of arrivals in Russia between 1994, the peak year of immigration, and 2004, with numbers once again on the rise by 2005. This increase is almost exclusively accounted for by immigration from CIS states: the number of arrivals from non-CIS countries is not only very small in absolute numbers but also even this small number is slowly decreasing.

Internal migration in Russia is commonly referred to by specialists as one of "zapadny dreif," that is, "western drift."[22] This metaphor of population shift and redistribution captures a very important new phenomenon, namely the reversal of the 20th century trend of movement from West to East: in the 21st century the movement is from East to West.[23] One of Russia's leading demographers, Zhanna Zayonchkovskaya, notes that "The territorial preferences of the population have divided Russia into two opposite parts: The Southwestern zone of inflow and the Northeastern zone of outflow. The separation cuts through Moscow-St. Petersburg-Kazan."[24] Nikita Mkrcthian provides a more detailed description of internal migration patterns by analyzing internal migration on the federal level (seven federal districts) and the regional level. According to Mkrtchian, since 1991 Russia's population has mainly been moving from the Siberian and Far Eastern Federal Districts to the Central and Western Districts. As Putin noted, "The income of the population in real terms is 85 per cent of the average level in Russia, and the cost of life in the [Siberian Federal] District is higher then the average in Russia…"[25] The Russian Far East, which constitutes 41 percent of Russian territory, lost two million inhabitants over the last 14 years—only six percent of the population live there.[26]

Figure 3. **International Migration to/from the Russian Federation, 2000-05**[27]

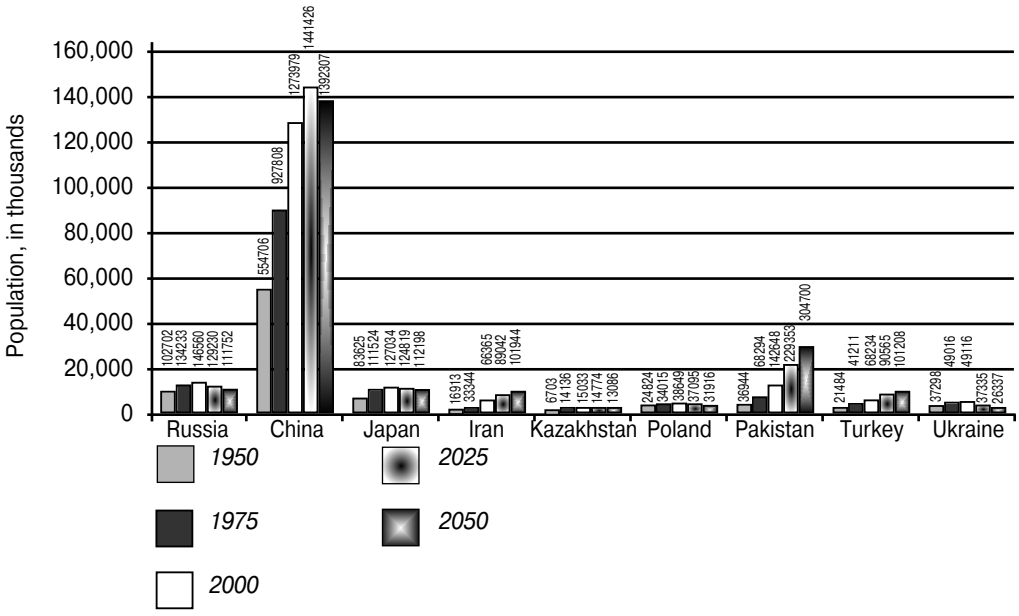


In addition, the internal migration flow from rural to urban settings, differential birth and death rates between different religious and ethnic communities (not least between Slavic regions and "ethnic homelands"), the aging of the population and changing sex balance, as well as the devastation caused by HIV/AIDS, are well understood by the demography community and political geographers. For example, between 1989 and 2002 "only 27 of Russia's 87 regions (excluding Chechnya and Ingushetia) registered more births than deaths. Most were located outside the central core of the country, in the ethnic homelands in the North Caucasus and the various regions of Siberia and the Far East."[28] As Russia is an extremely large and diverse country, we can expect that there will be a regional aspect to almost every socioeconomic, political, and military issue. As Putin went on to note, such trends suggest a "further reduction in the number of population in Siberia and the Far East may lead at the first stage to narrowing of the national economic space, at the second phase—to intensification of creeping ethnic expansion, and at the third [phase] —to a serious potential peril to the integrity of the state."[29]

We should also note Russia's population projections in comparative terms, particularly when key neighbors are used as points of reference. In Figures 4, we observe that a minority of

these selected states are declining and amongst them—Russia, Ukraine, Japan, China, and Poland—Russia's projected decline is steepest. Furthermore, this is occurring in a context where the majority of the states in question are expected to have population increases: Iran, Pakistan, and Turkey. Moreover, although China is expected to decline by 2050, the decline will be slight: from a high of 1.44 billion to 1.39 billion.

Figure 4. **Population Prospects for Selected Countries, 1950-2050**[30]



Political Security Considerations

The demographic decline raises a series of issues concerning the political security and stability of the Russian federal system. These are related not only to potential changes in voter preference, the political weight of constituent parts of the federation, and the viability and sustainability of the current federal architecture, but also to the rise of gender politics and the potential politicization of Islam within Russia. An electoral geography is emerging with certain features. Voter turnout and orientation is partially influenced by the age composition of the regional populations. A left-leaning red belt of regions stretching from the southwest to the southern portions of the country with aging populations (pensioners tend to have high voter turnout) voted for the Communist Party in the 2000 presidential elections and to a lesser extent in 2004: "Putin received more than 80 percent of the vote in 16 regions, all of which were ethnic regions, including Chechnya, Dagestan, and Kabardino-Balkaria, even receiving 98.18 percent in Ingushetia."[31] Since well over 50 percent of the registered voters that comprise the total electorate reside in 20 of the most populous regions, radical changes to the political geography, and hence the political security implications of demographic change for the Russian Federation, are not as important as one might at first suppose for the political geography of the federation. Demographic decline does, however, increase the politico-military security importance of sparsely populated border regions in the eyes of the center. Indeed, the role and significance of the state border increases in significance as global stocks of hydrocarbons, drinking water, and agricultural land diminish and the world's population grows.

Throughout the Yeltsin and Putin presidencies, the Russian state has propagated a civic, not ethnic, national identity project, an effort to build the *Rossiyanin* (a citizen of Russia) not *Russkiy* (ethnic Russian). In fact, it is the conservatives (Communists, Agrarians, and LDPR) who have played the ethno-national card, rather than the executive-backed "parties of power." Nevertheless, it is possible that demographic decline and the gradual consolidation of an eth-

nic Russian population in Russia's European core and the decrease of the proportion of ethnic Russians in non-Russian ethnic republics, especially those where titular nationalities are predominantly Islamic, could increase pressure to recentralize state power and allow "the politics of Putinism" to become more associated with Russian ethnocentrism. The 2002 census illustrated one key trend in Russia's ethnic composition: the continuing decrease in ethnic Russians relative to non-ethnic Russians, down 3.3 percent since the 1989 Soviet census. Figures 5 and 6 note the net statistical dominance of ethnic Russians over the seven other major ethnicities in Russia, but as a percentage of all ethnicities, not just the seven largest, the ethnic Russian population is falling, as we shall note below.

Figure 5. **Ethnic Composition of the Population, 2002 Census**[32]

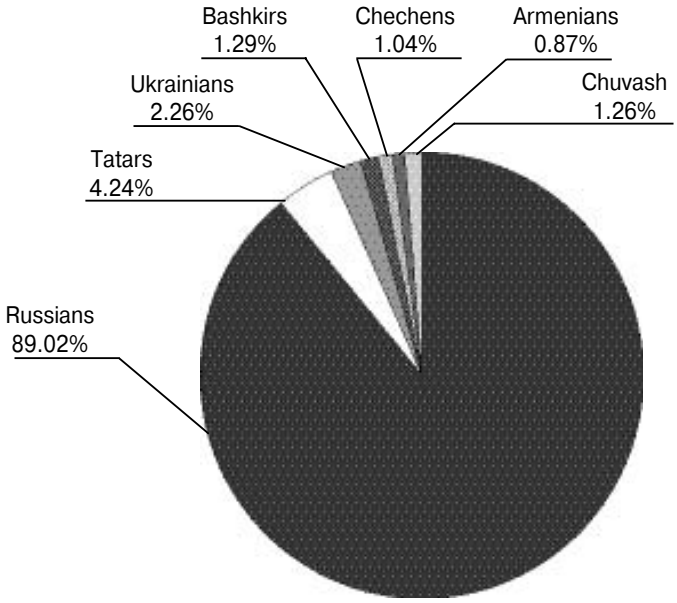
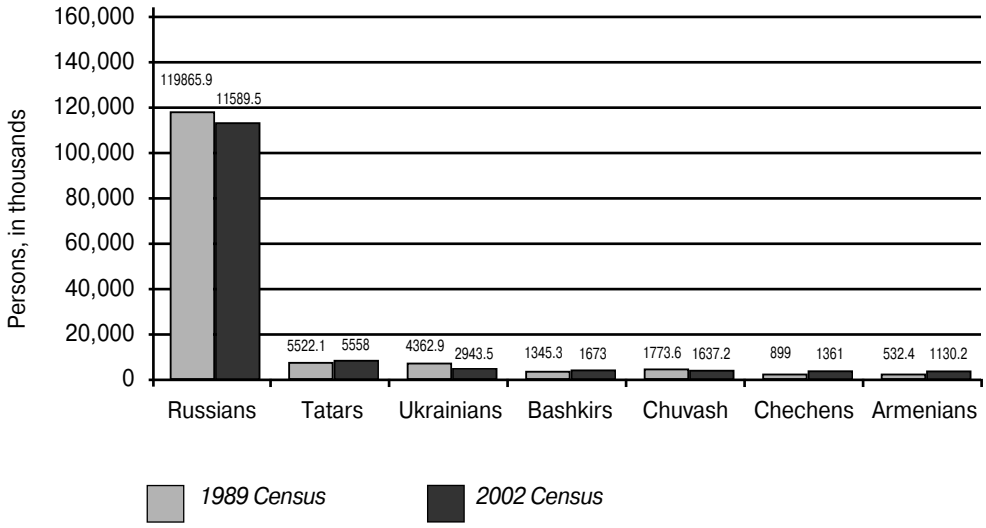
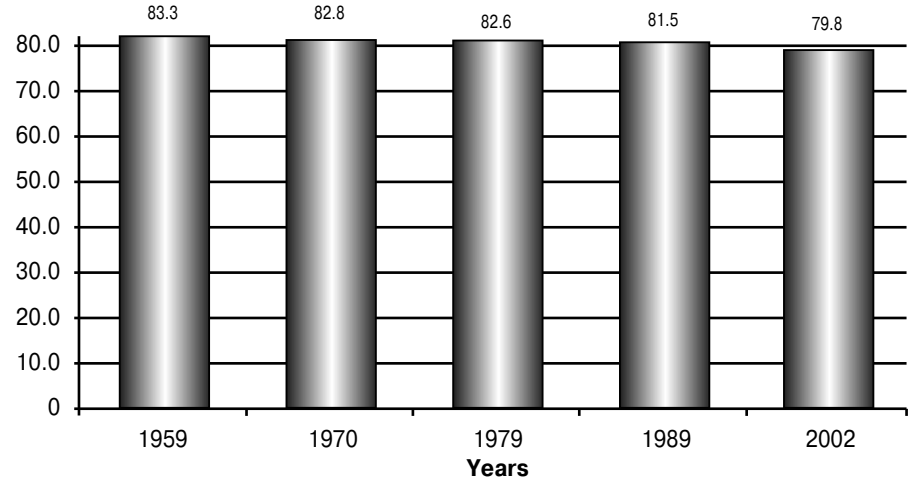


Figure 6. **Russians and the Six Other Largest Ethnic Groups since the 1989 Census**[33]



It should also be noted that the ethnic Russian population, as a percentage of all other citizens within the federation, has been on the decline since 1959 (Figure 7) and the fertility rate of the six biggest non-Russian ethnic groups is higher than that of Russians.

Figure 7. **Percentage of Ethnic Russians in the 1959, 1970,1979, 1989, and 2002 Censuses**[34]



The decline of the Slavic population is even more pronounced when we consider statistics illustrating the fall in the two other major Slavic populations of Russia: Ukrainians (from 4362.9 in 1989 to 2943.5 in 2002) and Belarusians (from 1206.2 in 1989 to 814.7 in 2002).[35]

The 2002 Census reveals that the ethnic Russian population has declined from 81.3 to 79.8 percent of the population of Russia, the lowest since the first Soviet census of 1926.[36] The advent of the second Chechen campaign, the perceived threat of "Islamic terrorism," and the reduction of the sovereignty of Russia's ethnic republics have all provided an environment within which the recentralization of state power has greater legitimacy. Moreover, the adoption of a set of specific policies, namely the creation of the federal district structure, the association of the state with the Orthodox church, and Putin's calls for a national idea based on the "traditional values" of the Russians—patriotism, *gosudarstvennichestvo*, and social solidarity (*sobornost*)—has established a clear link between Putinism and Russian ethnocentrism.[37]

It is interesting to consider the opinion of Putin's former economic adviser, Andrei Illarionov, who has claimed that if new government measures to stimulate birth rates economically and financially are realised, this "will only complete the dissolution of the Russian Empire" because the vast majority of funding will benefit the "national" [ethnic] regions where the birth rates are already higher than for ethnic Russians. According to Illarionov's pessimistic scenario, the increased population of those regions in comparison to the rest of the country could move these regions away from the center and even "out from Russia,"[38]

Although such a pessimistic prediction is somewhat exaggerated, the slow, gradual but constant diminution of ethnic Russians in favor of non-ethnic Russians does not show any sign of reversal. The ethnic decline within Russia's demographic crisis has a particularly important linkage to the migration problem. Most experts agree that Russia cannot resolve the demographic crisis without a large scale immigration policy.[39] According to some, if the current population size is to be maintained through migration; then the descendents of these migrants will make up more than half of the population by the end of the century.[40] Russia will, therefore, be confronted with serious questions that will arise in the near future. What will the Russian ethnic picture look like over the next few decades? Will Russia continue to be the country of Russians or even "for Russians" as nationalist movements claim? How will it affect Russian identity, the nature of the Russian state, interethnic relations, as well as electoral campaigns and results?

Will Russia manage to have a successful cultural and political assimilation of its non-Russian population and immigrants? Will Russia manage to successfully counteract the rise of nationalist and in some cases extremist movements in order to ensure a sustainable immigration policy, vitally important for its demographic situation?

Migration from ethnic republics on the periphery to the European core and differential birth and death rates between Muslim and non-Muslim societies in Russia could create a sense of threat among the majority population—albeit unintended. As Ramil Gainurdin, Chairman of Russia's Council of Muftis notes: "Muslims create big families, they have a lot of children, they don't abandon their children or their parents. So, yes, the Muslim population in Russia will grow. But not to the detriment of Russians."[41] Potentially, though, state support of Orthodoxy and political uniformity from above, combined with an increasing assertiveness in Islamic society from below, could exacerbate the political asymmetry between the size of Russia's Muslim minority and its representation in the national elite.[42]

Economic Security Considerations

The economic security implications include the increasing difficulty in capacity building, a labor reserve shortfall, the economic costs of HIV/AIDS, and the societal security implications that follow. Russia adopted an economic security concept in 1996 but it was outdated by the 2002 census, failing to take into account the impact of the demographic changes upon the Russian economy. Although the economic security implications of uneven population distribution and net population decline are not yet well understood, Putin has noted that the core factors that affect the Russian economy—the demographic situation, illegal migration, border and customs issues, and threats to the energy and transport systems—have rapidly changed in the new century.[43]

Analysts have already highlighted the current impact of the demographic decline on "capacity deepening" within the labor force (building on existing skills in order to increase productivity) and the reduction in savings and investment rates reinforces the decline in economic growth.[44] The need to maintain the high technology potential of the Russian workforce has been recognised by the Putin government, reflected in the decision to create Technoparks to both retain potential and recruit those Russians that have migrated abroad.[45] The main aim of the program is to support the development of the economy's high tech sector and to that end Prime Minister Mikhail Fradkov underlined "the very creation of these technoparks provides evidence that the economy has entered the innovation path of development."[46] Apart from some tax privileges, as an incentive the government also co-finances companies which relocate to these new Technoparks.[47] In 2007-2010, seven new Technoparks are planned for Moscow, Novosibirsk, Nizhegorodsk, Tyumen, and Kulush regions, as well as in Tatarstan and St. Petersburg. It is too early to tell if this initiative will prove effective.

Despite the fact that the further decline of the population is predicted and to an extent can be factored into long-term economic planning, it is extremely difficult to calculate the impact of an apparent reduction in savings, rates of investment, and economic growth on the economic security of Russia because the nature of the decline—who dies and when—is unpredictable and non-linear and therefore imposes variable economic costs.

Russia faces the problem of widespread elderly poverty. With male life expectancy at 58.8 years, the Russian state is relieved from paying a consistent percentage of its pension bill. Nonetheless, because of a chronic lack of resources, the social safety net is still unable to fulfil its obligations. To address the crisis of the pension system, former Prime Minister Mikhail Kasyanov announced plans to launch a 50-year pension reform, which would take into account the country's current and expected demographic and economic situation. The workforce supply will probably continue to exceed demand and the dependency ratio—the ratio of persons not of working age ("dependents") to those of working age—will actually decrease from 42 to 36 percent of the population. This creates a small window of opportunity for the Russian government to reform the pension system, as the young people born in the 1980s baby boom will only join the job market in the next few years, swelling the workforce by 1.0 million. Education and Science Minister Andrey Fursenko, citing a Federal Statistics Service forecast, has stated

that the number of Russian people aged between 15 and 25 will decrease by more than a third by 2015, to as low as 18 million. By 2016 "the dependency ratio, which is the number of dependents per 1,000 working-age population, will increase by 20 per cent on 2005, to reach 709 people."[48] However, in the longer-term, the dependency ratio will swing in the other direction, resulting in the diversion of greater state finance towards the elderly and less upon the economy or military.

As well as facing a shortfall in labor reserves, Russia is confronted by an economic security dilemma in some parts of the federation. Sergey Mironov, the head of Russia's Federation Council, highlights the critical importance of the Asia-Pacific region to Russian economic growth and modernization, stating that this region accounts for 55 percent of the world's GDP and 60 percent of the global market. If moderate economic growth is recorded in the Russian Far East, for example, then it is calculated that this will increase the mobility of the population and allow the current deferred migrants to leave for European Russia. It is economic stagnation that keeps the emigration at current levels and only a massive economic resurgence would return incentives, subsidies, and benefits to workers in these peripheral regions, thus increasing immigration.

Societal Security Considerations

Throughout the 1990s, the inflow of migrants has played a crucial role in balancing out the demographic decline in Russia. Between the 1989 Census and the one in October 2002, Russia absorbed a net influx of migrants—a total net addition of 5.5 million was recorded.[49] However, with the stabilization of economic and political conditions in many CIS and Baltic states, the number of migrants has fallen. Estimates of the Ministry of National and Migration Policies claim that to keep the country's population at 140 million, between 700,000 and 1 million immigrants need to be attracted annually, while in 2001 only 380,000 people moved to Russia.[50] By 2003, "the number of migrants from the Commonwealth of Independent States was only one-eighth of what it had been back in 1992." The diaspora population has fallen from 25.2 million in 1989 to 18.2 million, according to analyses of the first round of censuses in the post-Soviet space, reflecting partly a real decline and also a decline in those who identify themselves as "Russian."[51]

As a result of this trend, even by the late 1990s the focus of sources of immigration to maintain population levels had shifted from the repatriation of the Russian diaspora in the CIS to the arrival of economic migrants and refugees from both CIS countries and countries of the so-called "far abroad" (countries outside of the former Soviet Union). However, the fact that "foreign" immigration is a relatively new phenomenon for Russia makes it difficult for ordinary citizens and state authorities to adjust to it.

While most specialists dealing with Russia's demographic crisis argue for the necessity of increasing immigration rates in order to win the "demographic battle," an ethnic "drunken fight" in the tiny town of Kondopoga, near the capital of Karelia (Petrozadvodsk), in the Northwest Russian Federal District, led to serious interethnic clashes, involving extremist organizations. In late August 2006 a drunken scuffle between an ethnic Azerbaijani bartender and a few ethnic Russians exploded into a mass brawl involving armed ethnic Chechens in support of the ethnic Azerbaijani. The fighting claimed the lives of two men and left many others severely injured and led to the evacuation of ethnic Chechens families from Kondopoga in order to prevent further pogroms.

The mayor of Petrozavodsk, Viktor Masliakov, noted that extremist youth groups and organizations had arrived from Moscow and St. Petersburg, met in Petrozavodsk, and had been involved in the conflict in Kondopoga in "support" of ethnic Russians against migrants from the Caucasus. He warned that "some people are trying to make Petrozavodsk an example for the whole of Russia."[52] This event underscored the actual and potential challenges posed by the adoption of a large scale immigration policy in today's Russia.[53] Indeed, it was not so much the deaths the conflict caused, but the fact of popular unrest in combination with the rise of extremist organizations, that creates a very dangerous example for cities throughout Russia that have similar interethnic complexions but larger populations. Russian chess grandmaster

and leader of the United Civil Front, Garry Kasparov, declared that the events in Kondopoga reflected the "whole complex of all Russian problems."[54] Alexander Dugin, a philosopher and the chairman of the Eurasia political party wrote that "the events that exploded to the surface in that small microcosm of Russian society reflect the country's situation on the ethnic, professional, and psychological plane. Kondopoga may blaze a trail into the abyss for all of us, as the road of interethnic tensions will only lead to Russia's collapse, to a finale where it will lose its leading positions in global geopolitics."[55] Fears of continued mass unrest between ethnic Russians and Caucasian "newcomers" have led Russian authorities to deploy the regional OMON (Police Special Units) to prevent large-scale pogroms.[56]

This issue is particularly relevant in the Russian Far East, where the total population has fallen from approximately 8 million in 1990 to 6.7 million in 2002, whilst in the three provinces in northern China that border the Russian Federation (Heilongjiang, Jilin, and Inner Mongolia) the total population is above 100 million. This growing population density disparity between Russia and China has raised the profile of this issue.

By 2050, the proportion of immigrants in the work force will rise to at least 20 percent, while some sociologists have forecasted that 7-10 million Chinese will live in the Russian Federation. Zhanna Zayonchkovskaya, head of the population migration laboratory at the Russian Academy of Science's Institute of Economic Forecasting, for example, has predicted that by 2050, the Chinese in Russia may become the second largest ethnic group after ethnic Russians. Chinese will constitute an inalienable component of the Russian work force, capable of reviving the national services, construction, municipal transport, and agricultural sectors.

A rising number of well documented racist attacks on individuals of Caucasian and Central Asian origin and the increasing emphasis the authorities have been putting on the illegal aspects of immigration testify to the growing discomfort around the issue of migration.[57] Experts note the emergence of forms of "migrantophobia" that paradoxically appear to be strongest among members of the public seldom in contact with immigrants. Increased societal tension and the development of cultural stereotypes by local and national authorities eager to gather the political rewards of chauvinism are equally responsible for an inconsistent policy line, increasingly geared towards a discriminatory understanding of immigration.

However, assessments of increasing immigration appear exaggerated. The most realistic assessment is that no more than about 280,000-300,000 Chinese migrants can be found in the Russian Far East on any given day and around 90 or so percent of them are most likely to be transient, temporary cross-border migrants.[58] Furthermore, North Korean and Vietnamese workers may be included within these composite "Chinese immigration" figures. The perception of a Beijing-controlled, state directed, neo-imperial colonization project is a myth that masks the reality of poorly managed, locally initiated, and small-scale ad hoc movements of largely transient Chinese labor into the Russian Federation. As Sergey Luzyanin has noted: "Realistically, there are some 250,000 but at any rate no more than 300,000 Chinese of permanent residence in Russia now. So, in general, this issue is not so acute. It is not so in reality. Objectively, of course, there is a demographic threat of expansion," he acknowledged. "This is plainly the case, given that there are 270 million Chinese in the three provinces in the northeast of China, against five to six million Russians in Siberia and the Far East. For the moment, there is no planned, systematic migration policy on the part of Beijing. God forbid that it should appear. It is for that that we need strategic relations between Beijing and Moscow."[59]

Military Security Considerations

The Russian military has been contracting in terms of personnel, resources, and prestige throughout the 1990s and into the new century. Deputy Chief of the General Staff Colonel General Vasily Smirnov notes that the pool of Russian men eligible to be drafted into the army is decreasing by over 100,000 a year: "Because of the demographic situation, the draft will be more restricted in the future than at present. In 2005, we registered 1,200,000 men, and this year 1,100,000 men, and forecasts for next year are even lower." Quantity is an issue, but so is quality of conscripts: "This year about 50 percent of the draftees have various health defi-

ciencies and cannot be sent to line units of the armed forces."[60] The organization-mobilization department of the Ministry of Defense twice a year "ritually" complains of the quality and quantity of recruitment after each recruitment drive draws to a close.[61] However, such complaints are not simply means of pressurising the Finance Ministry to increase the defence budget, it is becoming increasingly clear they reflect a reality that is steadily worsening.

Thus demographic factors will largely shape the nature, pace, and direction of military reform in conventional forces. Demographic change will force the Russian military to accept a radical downsizing of the Russian armed forces. This suggests that Russia will effectively end mass conscription and move by default to the creation of a professional army with contract service and an enhanced technological capacity to compensate quantity with quality. This will demand greater resources. Given the projected "dependency ratio" between the able-bodied and the aging population increases after 2006-2010, there are clear resource and financial implications for future levels of GDP and affordable military spending for the Russian Federation. In short, the greater state resources directed towards Russian pensioners the less state revenue available for "military transformation" expenditure.

The downsizing of Russia's armed forces has the unintended consequence of reinforcing internal migration patterns. For many communities, the presence of large armed formations acts as a magnetic center for other networks and industries. The reduction in military forces, a feature of the last 10 years, has been particularly acute, for example, in the Far Eastern Military District and has contributed to the reduction in the population as employment opportunities related to the military diminished. Between 1989 and 1997 ground forces shrank from 24 to 10 armored and motorized divisions, 120 to 43 submarines and 77 to 45 surface ships.[62]

It has been hypothesized that military reductions might in turn reduce populations in peripheral regions below recoverable levels. As the armed forces reduce their size, the likelihood that populations in peripheral communities will migrate to European Russia increases. This in turn increases the necessity for the state to deploy troops to defend these peripheral and further depopulated regions whilst at the same time rendering this task more difficult. One analyst, aware of the population differentials on the Russo-Chinese border (1:15-20) has even suggested: "Perceptions of low Russian population densities in the Russian Far East could lead to low-level Chinese probes and low intensity conflict in the next 10-20 years, but the continued existence of a substantial Russian nuclear arsenal will probably prevent the Chinese from seriously considering the option of launching a conventional military campaign to seize large parts of Russian territory as a result of demographic factors."[63]

POLICY IMPLICATIONS OF DEMOGRAPHIC DECLINE

The Russian population is falling, and this demographic decline has induced interlinked instabilities in the political, economic, and social spheres, which the state has begun to address. Population migration patterns have increased minority separatism in that the majority ethnic Russian Europeanised population is physically becoming more separated from the Eurasian minority periphery population and here "separation" can be measured in terms of ethnicity, age, and wealth.[64] This internal migration and population decline has foreign and security policy aspects, not least the management of competition between Russia, Ukraine, and Kazakhstan for the desirable but diminishing diaspora population, and the emphasis population decline and citizenship places upon the management of intractable separatist projects on Russia's borders. It also refocuses attention on the continued sustainability of the EU and China strategic partnerships in the face of "brain drain" and Schengen border tightening as well as the perceived threat of Chinese colonization of the Russian Far East.

Demographic decline and the security challenges it poses have promoted responses from the center in terms of policy initiatives designed to manage the current decline and control the redistribution of the population within the federation. This includes the elaboration of a migration policy, a demographic concept and policy, and a reformulation of a citizenship policy. The decision taken in November 2003 to allow a more permissive citizenship law—all those who formerly held USSR citizenship could now claim Russian citizenship—allows us insight into

current presidential priorities, although a backlash that restricts citizenship once again cannot be discounted (given the strength of the debate apparent at the draft law stage).

As the threats to the country's security posed by the demographic crisis are so extensive and profound, more vigorous governmental intervention to combat the population decline, by both providing support to natural population growth (aiming at increasing fertility or curtailing mortality) or by encouraging immigration, might have been expected during the Putin administration's first term. In May 2006, Putin called for a 10-year program to stop the sharp decline in Russia's population, principally by offering financial incentives and subsidies to encourage women to have children to increase the birth rate, as well as measures to cut the death rate and develop an effective migration policy. Indeed, legislation passed in 2005-2006 indicates the development of a coherent "managed migration" strategy that encourages regular migration through increasing the attractiveness of Russia as a migration destination, identifying clear and easy-to-follow procedures of entry, registration, and employment.[65]

However, Putin has an uneasy balance to maintain, with current brakes and filters reflecting an understanding that economic growth cannot occur at the expense of political stability or societal identity, which could result in a rise in ethnic or religious tensions within the federation. At present, the state lacks the political will to deploy adequate economic resources towards managing the population decline, while regional elites and powerful bureaucratic interests appear to be hijacking migration and demographic policies to further their own power bases and institutional interests.

Over the remainder of the second term of the Putin presidency, a coherent demographic policy needs to complement the new managed migration strategy. This policy must untangle the dilemmas associated with promoting economic growth whilst maintaining political stability and societal security: "The level of military security is directly related to the speed of economic growth and technological development. The demographic situation is most favorable in a country that not only reaches high social standards, but whose people feel secure for a long time and plan their life for a long time."[66] Putin ought to continue to formulate demographic policy in terms of national security concerns and strategic threats to Russia, in order to forge a consensus at the federal elite and expert levels on the necessity of funding natural population growth and less restrictive immigration. This consensus should allow the elite to overcome public alarm, the special interests of regional elites that favor opposing immigration, and bureaucracies that want to own the process rather than implement the policies. The short-term erosion of Putin's popularity and the political instability that such a project entails are easily offset by the longer-term gains made through the sustainability of the federation and the reduction of ethno-strategic vulnerability and the resultant diminution of minority separatism tendencies.

CONCLUSIONS: RUSSIAN POPULATION DECLINE AND GREAT POWER POLITICS

On July 8, 2000 in his first State of the Nation speech, Putin noted that demographic decline was one of the most important problems facing contemporary Russia: if the situation does not change "the very survival of the nation will be endangered."[67] Six years later, in his May 2006 State of the Nation speech, he still described the demographic crisis as "Russia's most acute problem."[68] What, therefore, might we conclude about the effectiveness of policy responses in Putin's Russia? Has the "state of the nation" changed or not?

At the beginning of December 2006, Mikhail Zurabov, the minister of Health and Social Development, reported to Putin that the demographic situation in Russia at the end of 2006 was the best it has been since 1999.[69] He reported a certain number of positive changes in trends such as a one percent increase in birth rates, a five percent decrease in death rates, as well as positive migration growth. However, one must be very cautious when assessing the significance of such developments because of the very small scale of the changes, which often only occurred at the end of the year. Zurabov himself was asked by Putin whether this improvement was a sustainable trend. He responded rather evasively saying that "we tend to think that, yes."[70]

It is difficult to have a very precise understanding of current improvements. On the one hand, since 2004 there has been a small growth in immigration rates that had been declining since 1994, as well as a slight growth in birth rates and decreasing death rates. Yet, on the other hand, some specialists highlighted the rather temporary nature of such improvements. Ekaterina Sherbakova points to the fact that 65-70 percent of deaths accounted for by Zurabov are for people who are approximately 60 years of age. Given the fact that the pre-1945 generation was larger than the post-1945 generation, the decline in death rates does not necessarily point to a structural improvement in high mortality rates.[71] The same logic, with some caveats, could be applied to account for improving fertility rates, noting that the "mini baby-boom" generation of the 1980s is now of reproductive age—the so-called "Gorbachev effect"—and that this trend will be short-term and reversed when the baby-bust generation of the 1990s come to reproductive age.[72]

Thus, to review the "demographic state of the nation" between the years 2000 and 2006, we can note that the population has suffered an overall decrease, despite a small increase in birth rates (accompanied with an increase in death rates until 2003) and positive migration. Although the demography project was the largest of the pan-federation social projects with the largest budget, experts and international organizations appear to agree that the Russian population will continue to fall, at least over the next few decades.[73]

On a national level and with an eye to the presidential elections in March 2008, demographic threats can also be woven into a campaign discourse that advances elite continuity. Rather than the Faustian "loans for shares" pact of 1996, or the initiation of a second Chechen campaign in 1999 ahead of the 2000 election, March 2008 could well be characterized by the creation of a new Super-National Russian idea—a unifying strategic rationale on a par with the "Third Rome" ideology of the medieval and early modern period.

Such a discourse is founded on the contention that Russia faces a host of implacable state, structural, and systemic enemies, both domestic and foreign. The demographic crisis, Chechnya, and the dangers of fundamentalist Islamist spillover into Dagestan, the rise of organized crime, NATO encirclement and US bases, the EU/OSCE-backed "color revolutions" (aided by the CIA and Soros), and the worsening plight of "compatriots" living in the post-Soviet space are likely contenders. Collectively they create the specter of multiple threats, which the opposition parties and potential presidential candidates may well be able to identify, but that only the incumbents can defeat. "Sovereign democracy"—a phrase that Vladislav Surkov, Deputy Chief of Staff of the Presidential Executive Office, test-drove earlier in 2005 and is now repeating again—will become the watchword of such a policy, its *raison d'être,* and the sunlit paradise to which only Putin's chosen successor can lead the Russian people. The very existence of the Russian state is at threat: existential survival can only be guaranteed by elite continuity.

If creating a psychological environment characterised by fear and xenophobia (an enduring feature of Russian political culture) to promote incumbent power is the chosen electoral strategy of Kremlin strategists and political technologists, it will be extremely interesting to see exactly how these different threats are utilized instrumentally to secure domestic political power, and the role allotted to demographic decline within this discourse. Already, Russian geopolitical thinking includes the protection of compatriot rights in Abkhazia and South Ossetia in Georgia, as well as the Dniester Region in Moldova, with the expulsion of Georgian migrants from Russia a by-product of the Russia-Georgia crisis of late 2006. The long-term population and migration strategies Russia is attempting to develop can easily be disrupted by short-termism, geopolitical expediency, and the necessity of ensuring elite and state consolidation continuities between the Putin presidency and the one to follow. That human security, national security, demographic decline, and Eurasian geopolitics is increasingly closely intertwined makes effective policymaking extremely challenging: Russia must rise to the challenge if it is to achieve its Great Power ambitions.

Notes

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Anton Khlopkov[1]

WHAT WILL A NUCLEAR AGREEMENT WITH THE UNITED STATES BRING RUSSIA?[2]

The decision of the presidents of Russia and the United States, Vladimir Putin and George Bush, to start negotiations on the signing of an agreement on civilian nuclear cooperation (a 123 Agreement)[3] was an unexpected result of the two leaders' meeting on the eve of the G8 Summit in St. Petersburg in July 2006. Immediately thereafter, head of the Federal Atomic Energy Agency Sergey Kiriyenko stated at a press conference that it would take "at least one year" to draft the agreement.[4] An agreement was finally initialed by the U.S. and Russian presidents on July 3, 2007.

What technical and political benefits could Russia's nuclear industry, government, and research institutes derive from the agreement? Could the agreement have a positive influence on the development of nuclear energy in Russia and increasing the competitiveness of Russian nuclear power plants (NPPs) and nuclear fuel-cycle services abroad? This and other questions are the subject of this article.

RUSSIA'S FIRST ENCOUNTER WITH THE 123 AGREEMENT

In 1989, at the International Symposium on Space Nuclear Power Systems in Albuquerque, New Mexico (United States), U.S. specialists indicated their great interest in the presentations by the Russian scientists Academician Nikolay Ponomarev-Stepnoi and Krasnaya Zvezda director Georgy Gryaznov on the results of the development and testing of the *Topaz* thermal emission space reactor.

The *Topaz-1* nuclear unit (also known as *Topol*) was designed under the scientific guidance of the Institute of Physics and Power Engineering (Obninsk, Kaluga Region) in accordance with CPSU Central Committee and USSR Council of Ministers decree No. 702-295 of July 3, 1962, to be used in radar reconnaissance spacecraft, while the *Topaz-2* reactor (also known as *Yenisey*) was designed by the Kurchatov Institute of Atomic Energy in accordance with CPSU Central Committee and USSR Council of Ministers decree No. 715-240 of July 21, 1967 to be used in spacecraft for broadcasting television from outer space.[5] Flight units of the *Topaz-1* reactor were launched into space as electric power sources on the naval reconnaissance satellites *Kosmos-1818* on February 2, 1987 and *Kosmos-1876* on July 10, 1987.[6]

From the mid-1980s, Soviet financing of this area of research was significantly reduced, like many other areas related to nuclear technology. In order to transform the technologies into industrial designs, the Russian enterprises started seeking international cooperation, a possibility which appeared with the advent of *perestroika*.

In April 1989, the Kurchatov Institute of Atomic Energy hosted negotiations between Soviet *Topaz-2* designers (Kurchatov Institute of Atomic Energy, Central Design Bureau for Machine Building (TsKBM), Luch Scientific Production Association) and representatives of the U.S.

company Space Power Inc. (SPI). The negotiations dealt with the possibility of cooperation in the sphere of civilian space thermal emission reactors, as an alternative to solar power units.

The negotiations resulted in a decision to hold a demonstration of a *Topaz-2* reactor unit (without nuclear fuel)[7] in January-March 1991 at the next Symposium on Space Nuclear Power Systems in Albuquerque, and at the "Science-Space-Conversion" exhibition at the University of Maryland.[8,9]

The demonstration of the system generated great interest among U.S. scientists. However, when the time came to return the system to Russia, the Russian scientists ran into unexpected difficulties arose. U.S. Customs refused to allow the return of the system on the grounds of the absence of a relevant license, and U.S. licensing authorities refused to allow the system to be shipped from the territory of the United States on the basis of the Atomic Energy Act of 1954, which allows U.S.-Soviet cooperation in nuclear technologies only if there is an agreement on the peaceful uses of nuclear energy (a 123 Agreement) between the two countries.

The import of the system to the United States from the Soviet Union also fell under the legal limitation under the Atomic Energy Act, but the Americans had given special permission for the import. The top managers of Space Power Inc., which had received the permission to bring the reactor unit to the United States, asserted that they did not know of the difficulties that might arise in seeking to return the equipment. The Russian scientists had to come back to Moscow without *Topaz-2*. The need to return the system back to the Soviet Union became quite urgent.

One morning, after again having heard in his car on the way to work a report on the "detention of Topaz-2" in the United States, Minister of Atomic Energy and Industry Vitaly Konovalov met in the corridor of the ministry with Academician Ponomarev-Stepnoi, who headed the Russian delegation at the conference in Albuquerque, and noted reproachfully: "Still, you have to return the system!" "I will!" answered the academician, who had already been thinking hard for several weeks about how to overcome the restrictions set forth by the U.S. Atomic Energy Act. There was no ready solution, and the lawyers recommended by the Kurchatov Institute's U.S. partners did not help either, since they confirmed that it was impossible to return the system due to the ban imposed by the act. And even possible alternatives like removing individual components of the system did not change the situation, because the system still was on control lists according to U.S. law.

In the end, Academician Ponomarev-Stepnoi decided to seek a solution at the very top: he decided to write to President George Bush senior, who was the only individual, under U.S. law, that could decide in favor of the Soviet scientists.

Soon the letter was ready. It noted that, in contradiction to the desire of the U.S. and Soviet scientists, there were artificial bureaucratic barriers impeding this process, and one of the examples of that was the reactor's *blockade* on the territory of the United States.

Before sending the letter, the advice of someone more experienced in diplomacy was required. The choice was made in favor of Eduard Shevardnadze, who at the time had already resigned from the post of Soviet Minister of Foreign Affairs, and then headed the Foreign Relations Association. At the meeting, Eduard Shevardnadze carefully examined the letter and praised its contents. However, he suggested that Academician Ponomarev-Stepnoi should find a way to submit the letter to the U.S. president himself.

After a long telephone negotiation with the U.S. Defense Department, which was also involved in shipping the system to the United States, a fax number in Washington was obtained, to which the letter had to be sent.

The process of obtaining permission from the Bush Administration to return the system took several weeks, and only in May 1991 was special permission received from the U.S. president, permitting the return of *Topaz-2* to the Soviet Union.

This was how Russian scientists encountered the 123 Agreement for the first time in practice. In the following years, several U.S. presidents gave similar permission, providing an opportunity for the nuclear industries of both countries to cooperate (for the supply of Pu-238, which is used as an energy source in spacecraft; for the HEU-LEU Agreement, which supplies fuel to

50 percent of the NPPs in the United States, etc.). However, during the time that has elapsed from the moment of Russia getting its first "taste" of the 123 Agreement, no legal basis for long-term cooperation between the two countries in the sphere of nuclear energy has been created.

POTENTIAL AREAS OF COOPERATION

In order to determine the possible areas of cooperation with the United States in the nuclear sphere at the present time, one must first understand the main elements leading the development of Russia's nuclear branch in the intermediate- and long-term, and identify those areas where Russian scientists and companies need international cooperation, in part with their U.S. colleagues.

Under the Federally Targeted Program "The Development of the Nuclear Industry in 2007-2010 and its Prospects till 2015," approved by the Russian government on October 6, 2006, there are plans to put 10 new nuclear power plant units with a total generating capacity of no less than 9.8 GWt into operation, bringing the total installed capacity of the nuclear power industry to 33 GWt. Implementation of this plan will mean that the share of electricity produced by NPPs will amount to 18.6 percent of Russia's entire output of electric power, while NPP operating costs will be 20 percent lower than in 2006.[10] By the year 2030, Russia plans to put 42 nuclear power reactors into operation, increasing the share of the nuclear power production sector to at least 25 percent of the entire power output. In order to attract additional funds for the development of nuclear industry, the goal was set to simultaneously boost exports of nuclear technologies at a level comparable to their domestic introduction.

The time before 2030 is regarded as a period of transition to innovative technologies, given that the time needed for development and commercial production in the nuclear industry is commensurate with the duration of the service life of the industry's key facilities, which as a rule can last several decades. After 2030, the current nuclear industry shall transition into an "innovative nuclear power industry," which is to be completed by 2050.

In the preliminary phase, the build-up of the nuclear industry's output will be done by putting into operation upgraded pressurized light water reactors. Further output growth will be accomplished by putting commercial fast reactors into operation.

LIGHT-WATER REACTORS, CHANNEL REACTORS, AND OTHER OPERATIONAL REACTORS

Increasing the capacity factor of nuclear power plants in operation

One of the key problems of Russian atomic energy is the low capacity factor (CF). In 2006, it constituted 75.9 percent[11] for Russian nuclear power plants (31 nuclear reactors in total), which, despite steady growth over the past few years (in 2002 it was 71.7 percent, and in 2005 it was 73.4 percent), is far from the average in the United States and the European Union, where it is 85-90 percent.

Increasing the CF depends on decreasing the regular maintenance periods and refueling time, which in turn depends on the quality of the equipment section and the efficiency of the reactor automatic process control system (APCS).

The CF of the 103 operating power reactors in the United States in June 2006 was 89.6 percent, and the average refueling time was 32 days.[12] For comparison, refueling and maintenance at one of the most modern Russian NPPs, the Balakovo NPP, takes 50 days on average.[13] Moreover, the United States managed to increase the CF at their NPPs in 1997-2002 by 10 percent, and to decrease the refueling time in 1990-2004 from 74.5 days to 32 days, with installed nuclear capacity more than four times higher than in Russia, and power generating units generally older than Russian ones.

Thus, it would seem expedient for the Rosenergoatom company, which is responsible for operating Russian nuclear power plants, to examine the U.S. experience, and possibly conduct joint activities with U.S. scientists aimed at increasing the effectiveness of operating power plants. At present Russia is already conducting this sort of cooperation with Germany. With the assistance of German specialists, fuel handling machines at all four reactor units at the Balakovo NPP will have been modernized by 2009. Russian hardware components lag significantly behind European and U.S. ones; here too, cooperation may be in Russia's interest, with a view towards increasing the CF of light-water reactors and their competitiveness abroad.

Decreasing maintenance costs and extending the operating life of NPPs

Another natural area for cooperation between Rosenergoatom and its U.S. counterparts is the exchange of experience in extending the operating life and decreasing the maintenance costs for NPPs. According to the Federally Targeted Program "The Development of the Nuclear Industry in 2007-2010 and its prospects till 2015," Rosenergoatom has to cut costs by 20 percent before the year 2015.

The United States has positive experience in implementing programs aimed at lowering maintenance costs (operation, process control, and fuel supply) for NPPs. From 1987 to 2001 these costs in the United States decreased more than twofold (from 3.4 to 1.68 cents/kilowatt-hour); they currently stand at approximately 1.5 cents/kilowatt-hour.

Another positive experience in U.S. NPP operation is in the area of extending nuclear power unit's service lives to 60 years. The initial duration of an NPP operating license in the United States is for a period of 40 years; the license may be extended for an additional 20 years thereafter. In Russia the design service life of an NPP is 30 years[14] and it can be extended for an additional 15 years, making nuclear energy less economically attractive in Russia, given that capital expenditures constitute approximately 70 percent of nuclear energy costs.

Participation of U.S. companies in manufacturing equipment for Russian NPPs

The rapid decline in the output of the power plant industry over the last 15 years led to a loss of specialties at a number of formerly key enterprises in the Russian nuclear complex. A number of industrial giants like Atommash, in Volgodonsk, were privatized and underwent significant conversion towards other production. The initiation of large-scale Russian nuclear projects necessitated an actual recreation of certain links in the chain of engineering equipment in partnership with international corporations. Under the NPP-2006 project for the creation of next-generation, VVER-1,000 light-water nuclear power reactors (with an increased reactor unit installed capacity of up to 1,150 MWt, increased CF and electricity generation, and a combination of active and passive safety systems), plans call for the basic equipment to be produced in Russia, while auxiliary equipment may be partially substituted by imported equipment.[15]

For instance, Atomenergomash (a 100%-owned subsidiary of the TVEL concern) is holding talks with a number of western companies, including Alstom (France) and General Electric (U.S.) on establishing a turbine manufacturing joint venture.[16] The latter was reportedly offering to invest up to $100 million in the Russian machine-building industry.[17]

There has been a foundation for bilateral cooperation in the turbomachinery industry. In November 2006, Russia's Saturn research and production association and the GE Corporation agreed to build a joint production facility to manufacture industrial gas turbines under the U.S. corporation's license in Russia. The output of these industrial gas turbines is believed to range from 40 to 150 MWt.[18]

The 123 Agreement should give fresh impetus to cooperation between Russian and U.S. power plant engineering companies.

Joint construction of NPPs abroad

Cooperation in the field of light water reactor instrument components and automatic process control systems (APCS) could also be of interest for Atomstroyexport, which exports Russian reactors.

The global competitiveness of Russian NPPs depends to a large extent on the quality of modern systems to control technological processes at NPPs. In a number of projects abroad, including the construction of NPPs in Bushehr (Iran) and Kudankulam (India), Russia uses Russian-made APCS. However, this is mainly due to legal or political limitations on the participation of European or U.S. companies in the supply of nuclear power equipment to these countries, and not the competitiveness of Russian-made systems. However, there is a precedent, when due to the uncompetitiveness of Russian automated process control systems, a foreign customer insisted on using third-country equipment and systems during the construction of an NPP. For instance, during the conclusion of the contact for the construction of the Tianwan NPP in China, the customer put forward a requirement that the APCS should be not a Russian-made one, but one made by Siemens.[19]

Therefore, in order to increase the competitiveness of Russian NPPs on the foreign market, the company should outsource the supply of equipment for the construction of VVER-1000 reactors to Western contractors. This has already taken place. The tender for the construction of two reactors in Belene (Bulgaria) in 2006 was won with participation of Germany's Siemens and France's AREVA, which will supply digital APCS and some other equipment directly affecting the safety of the NPP and its technical and economic performance indicators. The joint Russian-German-French project can ensure higher technical and economic performance indicators through reduction of outage time, the increase of the service life of the main equipment to 60 years, and an increase in the capacity factor to 90 percent.[20]

Clearly, Atomstroyexport's future tenders for the construction of NPPs in eastern Europe will be more attractive to potential customers if it cooperates with foreign companies in APCS. Moreover, international cooperation in NPP construction doesn't just mean technological cooperation, but also political cooperation; it generates acceptance of such projects on the part of neighboring states—in the case of the countries of eastern Europe, that means the European Union. Were Atomstroyexport to cooperate with U.S. companies, it might have a positive effect on the views Asian and Latin American countries take of Russian projects.

One of the promising places for cooperation between the two countries is Turkey, which is planning to develop nuclear power and to build its first nuclear reactor on the shore of the Black Sea by 2015.[21] Turkey is a NATO member and is seeking E.U. membership; therefore, it would be difficult for Russia to gain access to the Turkish market alone. However, the chances increase significantly if Atomstroyexport cooperates with Westinghouse. On such a project, Russia's role could at least consist of supplying heavy equipment, including reactor vessels and steam generators. However, cooperation should be built upon mutual commercial, and not political, interest.

In general, such cooperation corresponds to contemporary global trends in reactor construction, since the decline of global capacities to construct NPP equipment over the past 20 years has made international cooperation inevitable in this sphere. For instance, Westinghouse has united its efforts with Japan's Toshiba, while General Electric has created an alliance with another Japanese company, Hitachi, Mitsubishi is cooperating with the French Areva, while the latter also own the nuclear division of Germany's Siemens.

Design of a new commercial light-water reactor

One more possible area of U.S.-Russian cooperation may be joint work on a next-generation light-water reactor to compete with Europe's EPR-1600.[22] Otherwise, Russia risks finding itself in the situation where it's competing on foreign markets with a European reactor of increased power and a U.S. reactor with the AP1000 passive safety system. It's hard to predict the outcome of such a competition, even taking into account Russia's new NPP-2006 and VVER-1500 projects.

However, a joint U.S.-Russian tender for the construction of light-water reactors abroad is not guaranteed success: Westinghouse has not had an order to build an NPP in the United States for over 30 years. But this sort of cooperation considerably increases a joint project's chances, particularly when one considers the possibility of joint political efforts to promote the reactor in third countries. Incidentally, nor can one completely exclude the possible cooperation of Russian scientists and engineers with their European counterparts on the EPR-1600 project.[23]

THE SUPPLY OF NUCLEAR MATERIALS FOR NPPs IN THE UNITED STATES

At the present time, Russian nuclear materials (NM) supplied via the HEU-LEU Agreement make up 50 percent of the electricity generated at U.S. NPPs. Since U.S. nuclear plants produce about 20 percent of the country's electricity, about 10 percent of U.S. electric needs are met thanks to NM from Russia. As of December 31, 2006, a total of 8.54 metric tons of low-enriched uranium had been supplied to the United States through the HEU-LEU Agreement, which is enough to meet the needs of nine VVER-1000 reactors for 40 years. According to Russian Foreign Ministry data, the yearly profit from the realization of this contract is about $700 million.[24]

Russian continues to have a significant scarcity of uranium extraction. The current consumption of uranium in Russia is on the order of 10,000 tons/year, while extraction is about 3,200 tons. The total deficit is on the order of 7,000 tons. According to the nuclear power development program, the demand is about 15,000 tons, and the deficit 12,000 tons.[25] According to domestic forecasts, Russia will only be able to reach a level of extraction[26] that will cover all of its domestic needs in 2015-2020. This is forcing the leadership of Rosatom, which is supplying uranium abroad, to examine the amount of domestic consumption of raw uranium materials.

U.S. representatives have repeatedly emphasized their interest in extending the program and the initiation of a new "Megatons to Megawatts-2" project. However, Russia is not interested in extending the HEU-LEU agreement. Nevertheless, Rosatom head Sergei Kiriyenko has already stated that Russia would like to maintain the quantity of its uranium sales to the United States, but wants to undertake them through commercial contracts based on market prices, and not via USEC, a monopolist, as is happening at present.[27,28]

NUCLEAR MATERIAL PROTECTION

Much has been accomplished through U.S.-Russian cooperation in the field of the protection of nuclear materials and facilities since the signing of the government-to-government MPC&A agreement on September 2, 1993. Thanks to joint efforts, Russian nuclear facilities not only have been equipped with adequate safety and security systems, but have adopted modern methods for handling and storing nuclear materials as well, which in the Soviet Union relied entirely on personnel. Thanks to these joint work, modern computerized technologies have replaced a rifle-wielding soldier, particularly in Russia's nuclear-powered navy. The bilateral cooperative partnership also resulted in other important achievements, including the establishment of a regulatory framework for MPC&A, an industrial system for the automated transportation of nuclear materials, and a personnel training system.

Thus, the foundation was laid to develop and strengthen the MPC&A system in Russia, making it capable of responding to new challenges and threats, such as terrorism. However, funding for MPC&A programs after 2012 (after the end of the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction) should come exclusively from the Russian budget. Over the last 15 years, Russia has become to a large extent self-sufficient in the technical side of MPC&A; provided the legal framework is in place, the facilities and equipment that currently are not produced domestically can be procured on the international market.

In addition, it is clear that U.S.-Russian cooperation in the area of physical protection must be transformed from a *donor-recipient* format to a partnership of equals. U.S.-Russian collaboration in the area of technology and equipment for physical protection should be transferred onto

a commercial basis (a *buyer-seller* format). A 123 Agreement should provide the long-term legal basis for such a relationship.

However, the end of the Global Partnership program does not mean that these countries will lose their common interest in the sphere of NM physical protection. The increasing technical abilities and preparedness of terrorist organizations have created new, increased requirements for effective MPC&A measures. Therefore, and given the need to increase the anti-terrorist capabilities of nuclear facilities, it would make sense to create a means to share experiences, new approaches, and methodology for ensuring the security of installations and materials located at enterprises in the nuclear industry. One of the areas for cooperation between the two countries in the area of MPC&A could be the IAEA and the Agency's activities in the development of international standards in this sphere.

POWER REACTOR SAFETY

The safety of nuclear power industry is a supranational issue. An accident at a nuclear facility will jeopardize and probably even end the development of the nuclear power industry in all countries, without exception.

The United States and Russia have collaborated extensively in the field of RBMK high-power pressure-tube reactor safety. However, this cooperation ended in 1998 after sanctions were introduced against the N.A. Dollezhal Research and Development Institute of Power Engineering (NIKIET), which was acting as a scientific advisory to the project at that time. After the sanctions were lifted in 2004, Institute leadership identified a list of potential areas of collaboration with the United States. Most of the efforts were focused at operating facilities, primarily RBMK reactors (the earlier cooperation had involved partnerships with Westinghouse Electric and Pacific Northwest National Laboratory, or PNNL). The list primarily included reactor safety. However, as of December 2006 the cooperation has not been renewed. We believe that this area of cooperation could be renewed with the conclusion of the 123 Agreement.

INTERNATIONAL URANIUM ENRICHMENT CENTER

Building upon President Putin's initiative, in mid-September 2006 Russia formally notified the IAEA that an International Uranium Enrichment Center (IUEC) was to be set up to make use of the isotope separation capacity of the Angarsk Electrolysis Chemical Complex[29] located in Eastern Siberia. The Center is intended to become an alternative source of enriched uranium for those countries that voluntarily decide against the development of national enrichment programs.

In addition, the center is open to countries that already possess separative capabilities, which, however, do not completely satisfy national needs. Further, Russia has not ruled out the possibility of a U.S. role in awarding uranium enrichment contracts to Russian facilities, including the IUEC, after the current HEU-LEU agreement expires in 2013 if by that time the U.S. enrichment plants in Ohio and New Mexico have yet to meet their full design capacities. In addition, uranium enrichment contracts are likely to be given to a new plant to be built by France's Areva.

In addition, the IUEC may be an element in the IAEA Nuclear Fuel Bank project that ensures nuclear power plant fuel supplies to countries that have no NPP fuel technology. These assurances may rely both on accessible fuel reserves to be used in the event a regular supplier defaults on a contract (i.e. a *physical fuel bank*) and on the obligation of fuel producers to set aside part of their product for the same purpose (i.e. a *virtual fuel bank*).

According to a U.S. international fuel bank proposal, the *physical fuel bank* could be controlled and managed by the IAEA. Given the plans to bring the IUEC under IAEA safeguards, it appears reasonable to give further consideration to the idea of setting up one of the reserve fuel storage sites at the IUEC. Such a storage site could hold a reserve of the enriched uranium product in the form of uranium hexafluoride.

Participation in the *virtual bank* project may also be of interest to the IUEC. Under this backup supply mechanism, an importing country facing a breach of its regular supply contract could apply to the IAEA and ask that the backup arrangement be exercised,[30] i.e. seek assistance in purchasing the nuclear fuel in a third country.

Russian cooperation with the United States (as well as with other countries possessing industrial uranium enrichment plants) is a prerequisite for the effective implementation of the International Uranium Enrichment Centers initiative. Political support from the United States could speed up the process of non-nuclear states joining the Russian initiative, which would have great importance for the nonproliferation regime.

INNOVATIVE NUCLEAR REACTORS

In order to make practical progress in the area of innovative nuclear reactors, given that Russia views fast reactors as an essential component of their development, as well as the fact that plans call for the use of nuclear energy in providing power for new energy technologies such as hydrogen production, the following basic tasks must be solved:

- ❑ Commercialization of the existing prototype fast reactor and closed fuel cycle technologies;
- ❑ Development of R&D and construction of a prototype innovative reactor and fuel technologies, with their subsequent commercialization as part of a final stage in the transition to an innovative nuclear energy industry.[31]

The development of innovative reactors is a large-scale research-intensive undertaking, requiring the united efforts of scientists from many countries. For Russia, the many tasks necessary for the development of innovative nuclear energy is complicated by the simultaneous development of a broad spectrum of reactor types in the country. For instance, in May 2006, Rosatom's innovation forum received 13 different innovative nuclear power reactor projects, and some of the proposed reactors used different types of fuel. For instance, oxide, nitride, and carbide fuels are all under consideration for use in sodium-cooled fast reactors.

Working under the GNEP initiative, the United States views development of a sodium fast reactor as one of the most promising projects. Under the Generation IV International Forum (GIF),[32] U.S. scientists are working on a high-temperature gas-cooled reactor. However, the Americans show no interest in lead-cooled fast reactors (like BREST). Thus, there could be Russian and U.S. interest in cooperating in the area of innovative reactors, primarily in the area of sodium-cooled and high-temperature gas-cooled reactors.

Sodium-cooled reactors

Russia has accumulated about 40 percent of the world's experience in fast reactor operation. The first prototype fast reactors were tested almost simultaneously with thermal reactors. The BR-1 and BR-2 reactors were put into operation in 1954 and 1956, respectively. Later, the sodium-cooled BR-10, BOR-60, BN-350, and BN-600 reactors were put into successful operation. The latter reactor has been in operation at Beloyarsk NPP in the Urals for more than 25 years, and is the only fast reactor in the world in commercial operation. The more powerful BN-800 reactor is also being constructed there; it is scheduled to be put into operation in 2012.

The United States started developing technologies in this sphere in the beginning of the 1950s. Five reactors were constructed, the last of which, the EBRD-2, was shut down during the Clinton Administration, in 1994. The main U.S. fast research reactor in Hanford was shut down in the end of 1993, and since 2001 has been undergoing decontamination; it will subsequently be dismantled.[33] Therefore, after the adoption of the GNEP program, the United States faced a lack of centers for testing the technologies and materials used in fast reactor systems.

Despite the availability of research centers actively working on fast reactor technologies in Russia (the IPPE State Research Center, Obninsk, Kaluga region and SRIAR State Research

Center, Dimitrovgrad, Ulyanovsk Region), the experimental basis for researching the properties of materials and fuel as well as for testing technologies related to the operation of fast reactors with sodium coolant, require further development.

Russia has tested oxide fuel technologies for fast reactors and is interested in nitride fuel. Studies on using minor actinides as fuel additives are under way. U.S. research is primarily focusing on metal fuel. There is interest under the GNEP program in oxide fuel that contains minor actinides, creating a possible area for cooperation and scientific exchange between the two countries. One of the possible sites for cooperation and testing various types of fuel *could* be Beloyarsk NPP, where the BN-800 fast reactor is under construction. However, without a 123 Agreement, U.S-origin fuel assemblies could not be shipped into Russia.

Another important area of cooperation between the two countries in the sphere of fast reactors should be developing safety principles and systems.

High-temperature helium reactor

Russia and the United States have a joint interest in high-temperature helium reactors. The experience and knowledge of both countries in this sphere are fairly similar.

There is a bilateral project currently under way that is looking at the development of a high-temperature gas-cooled next-generation reactor: the GT-MTR gas-turbine modular helium-cooled reactor. General Atomics and Afrikantov OKBM (Nizhniy Novgorod), with scientific oversight by the Kurchatov Institute, are working on the creation of a gas-cooled reactor capable of making hydrogen.[34,35] The project is being undertaken with equal funding from the Russian Federal Atomic Energy Agency (Rosatom) and the U.S. Department of Energy (DOE). Under this project, an experimental installation for the production of MOX fuel based on pellets with ceramic coating is being built at the Bochvar All-Russian Scientific Research Institute of Inorganic Materials (VNIINM) together with U.S. scientists. The experimental reactor installation should be ready in 2015, but the first prototype industrial high-temperature gas-cooled reactor will not be completed until 2023-2025. The project will cost at least $2 billion.[36]

Given Russian and the United States' common interest in building innovative reactors, and the shortage of experimental facilities for their refinement, the prospects for creating international research centers for fast reactors in Russia and analogous centers for high-temperature thermal reactors in the United States should be explored, if the Russian and U.S. specialists can be given the opportunity to conduct experiments in each other's research centers. Trilateral cooperation in this the field is possible with the creation Europe of a research center in Europe for heavy metal-cooled fast reactor technology.

INNOVATIVE NUCLEAR FUEL CYCLES

The following actions must be taken if an innovative closed nuclear fuel cycle is to be set up in Russia:

- ❑ establishment of a large-capacity spent nuclear fuel (SNF) storage site;
- ❑ commissioning of an industrial facility to reprocess SNF from VVER-1000 reactors;
- ❑ establishment of an industrial facility to produce fast reactor MOX fuel with the plutonium separated in thermal reactor SNF reprocessing;
- ❑ establishment of a large-capacity radioactive waste (RW) storage site[37].

SNF Storage

By mid-2005, Russia had accumulated 16,000 tons of power reactor SNF; the amount is expected to increase to 24,000 tons by 2015,[38] since 800 tons of irradiated fuel is generated each year.

The spent nuclear fuel facility at the Mining and Chemical Combine (Zheleznogorsk, Krasnoyarsk Krai), which is a wet (pool-type) SNF storage facility with a capacity of 6,000 tons, was commissioned in 1985. The storage facility is designed to maintain SNF submerged in pools of water for a period of up to 30 years. As of December 2006, the storage facility was receiving irradiated fuel assemblies (IFAs) from Russian, Ukrainian, and Bulgarian VVER-1000 reactors and was 81 percent full.[39] Through the construction of new SNF storage shrouds, the capacity of the depository can be increased to 8,600 tons of SNF, extending by 6-7 years the time that it will take to reach facility capacity, i.e. to 2016-2018.[40]

In 2001, the Mining and Chemical Combine in Zheleznogorsk initiated construction of a dry storage facility designed to hold 38,000 tons of SNF, including 27,000 tons from RBMK-1000 reactors and 11,000 tons from VVER-1000s. The storage facility was designed to receive and store SNF for a period of 50 years, after which the SNF would need to be either reprocessed or put into alternative long-term storage. The project will cost an estimated $540 million. The first phase of the complex, storage of 5,000 tons of RBMK-1000 assemblies, is scheduled to be launched in 2008.[41]

SNF Reprocessing

SNF reprocessing began in Russia with the launch of the RT-1 plant at the Mayak Production Association in 1976. The design capacity of the plant is 400 tons of SNF per year. The plant reprocesses SNF from VVER-440 and BN-600 reactors, icebreaker and submarine propulsion reactors, as well as research reactors. The regenerated uranium is used to fabricate fuel for RBMK reactors while the separated plutonium is put into storage.

In 1984, the construction of a second SNF reprocessing plant, the RT-2, was started in Zheleznogorsk. Plans called for the plant capacity to be 1,500 tons of SNF per year, which would permit the reprocessing of irradiated fuel from NPPs (primarily from VVER-1000 reactors) with a total installed capacity of 50-80 MWt. However, for economic reasons and due to the nuclear power industry slowdown, plant construction was halted in 1989 and later frozen.

In the late 1990s-early 2000s, the leadership of the Ministry of Atomic Energy showed great interest to setting up an international SNF storage facility under IAEA safeguards in Zheleznogorsk that would receive international SNF for long-term storage. It was assumed that in the absence of the requisite funding from the national budget, the funds needed to complete construction would come from foreign states wishing to send their SNF to Russia for storage. In order to provide a legal basis for the implementation of the project, amendments were made to existing environmental regulations. In June 2004, the issue was discussed at a meeting of IAEA General Director Mohamed ElBaradei and Chairman of the Russian Federation Government Mikhail Fradkov, as well as at a meeting between ElBaradei and Russian President Vladimir Putin.

Later, in accordance with a proposal put forward by President Putin at a meeting of the Eurasian Economic Community (EurAsEC) on January 25, 2006, the idea of an international storage facility was transformed into an initiative for the establishment of an International SNF Management Center.

The International Center, after it is set up, could perform the following functions:

- ❑ store Russian and foreign SNF until the issue of its reprocessing is resolved;
- ❑ select and improve technologies for SNF reprocessing and RW treatment;
- ❑ reprocess SNF to produce MOX fuel for fast neutron reactors;

❑ ensure reliable and safe long-term RW storage and disposal.

The initiative for the creation of an International SNF Management Center could also be an important component in a solution to the problem of how to reduce the risk of proliferation associated with the construction of NPPs in countries that to date have no industrial nuclear installations, including Algeria, Egypt, Morocco, Turkey, and the countries of the Persian Gulf. Given their lack of experience in handling large volumes of SNF, along with their *susceptibility* to large-scale terrorist acts, the return of SNF to producers from these states is a particularly urgent issue. Given that the United States does not accept such fuel, sending this SNF to Russia for storage at an International SNF Management Center could prove to be the most effective way to solve the problems related to irradiated nuclear fuel. According to Russian specialists, the creation of an International SNF Management Center requires some $3 billion in investments.[42]

Russia has raised the issue of concluding a bilateral agreement with the United States on cooperation in the sphere of nuclear energy[43] on multiple occasions, since it would provide a legal basis for the possible import of foreign SNF that contains U.S.-origin uranium to Russia. However, the Russian efforts have invariably come up against the political conditions put forward by the United States, particularly a demand that Russia curtail cooperation with Iran in the sphere of nuclear energy. In Russia, these *conditions* for signing the agreement and the attempt to use the SNF imports issue as a *carrot* were viewed quite negatively. In essence, a political decision was made temporarily to lower the priority of this issue.

In addition to political obstacles to the creation of an International SNF Management Center, there are a number of other barriers:

- ❑ **Russia's lack of breakthrough achievements in technologies used in the final stages of the nuclear fuel cycle, including innovative methods for SNF processing.** The current aqueous processing technology, PUREX, which is likely to remain the basic technology used by the nuclear industry in the near future, leads to a large volume of liquid radioactive waste (LRW)—some 2,000 m^3 from reprocessing one ton of SNF—and requires improvement. Important areas of future research in SNF handling include installations that use non-aqueous processing methods and increasing the profitability of SNF reprocessing. In 2006, the Mining and Chemical Combine, V. G. Khlopin Radium Institute, and Bochvar All-Russian Scientific Research Institute for Inorganic Materials (VNIINM) initiated an in-depth laboratory study on actual fuel of prospective technologies for SNF reprocessing, with included a reduction in costs for the construction of pieces of equipment and the elimination of certain operations. In future, the Mining and Chemical Combine plans to create a demonstration stand for SNF reprocessing that can handle 50-100 tons/year.

- ❑ **The absence of a full technical and economic substantiation for the project.** The most widely reported statistic in the late 1990s on the profitability of an international SNF storage facility—$20 billion—was essentially calculated on the fly in the following way: the entire Mining and Chemical Combine storage facility was designed to hold 38,000 tons, and Russia can devote space to hold 20,000 tons of foreign SNF at the facility; if the cost for one kilogram storage is $1,000, then income will total $20,000.

- ❑ **The lack of public support for the project.** This is another important factor, particularly given the many protests over the creation of a less sensitive enterprise from public point of view—the International Uranium Enrichment Center in Angarsk.

Given all of the factors above, the persistence of Federal Atomic Energy Agency head Sergei Kiriyenko should come as not surprise: he repeated three times during a single press conference at the G8 summit in St. Petersburg that Russia currently has no plans to import foreign-origin SNF.

However, one should keep in mind that the question of the construction of an SNF storage facility in Russia is not confined to the political plane, and does not depend on the 123 Agreement signed with the United States. The need to establish an SNF repository in Russia is urgent even

without imports of foreign irradiated fuel, given the plans for large-scale development of nuclear energy in the country and the world, since Russia has traditionally repatriated SNF when it has supplied nuclear fuel abroad.

The Federally Targeted Program "The Development of the Nuclear Industry in 2007-2010 and its prospects till 2015" provides for an entire series of research and development projects related to the establishment of an SNF repository, including work on the development of technical equipment for the transportation of irradiated fuel to a long-term centralized repository, as well as the establishment in 2011-2015 of a center for the refinement of technologies related to long-term SNF storage.

In the technological sphere, Russia is self-sufficient in terms of the basic equipment and technologies needed to establish an SNF repository. The United States, for its part, has fallen considerably behind in the development of SNF handling technologies, since work in this sphere was halted under the Carter Administration in 1977. At the same time, certain related pieces of equipment such as, for example, SNF transport containers, may surpass Russian analogs and could therefore be in demand.

The United States could also help in the development of new SNF handling technologies in Russia by not opposing the import of SNF containing U.S.-origin material into the country. Experts estimate that some 75 percent of all irradiated fuel abroad is under U.S. legal control.[44] Importing foreign-origin SNF to Russia would allow the industry to earn additional funds to develop handling and reprocessing technologies.

The volume of SNF created throughout the history of nuclear energy totals about 250,000 tons,[45] of which 34 percent has already been reprocessed. Geographically SNF is distributed as follows: the 53 percent (83,000 tons) in the United States, 23 percent (36,000 tons) in Western Europe, eight percent (13,000 tons) in Eastern Europe, and 16 percent (24,000 tons) in the Asia-Pacific region and other countries.[46] Each year some 12,000 tons of SNF are unloaded from reactors; about 800 tons of this comes from Russian NPPs.

Recent attempts to implement SNF management programs (for instance, in Japan and the United States) have shown that solving this problem on a strictly national basis requires significant funds and intellectual resources, and even then may not succeed. It should be enough to recall that the cost of the SNF reprocessing plant at Rokkasho (Japan) was $18 billion, but the spent fuel problem has yet to be resolved on a long-term basis.

The new U.S. energy policy of 2001 provides for joint development with foreign states of technologies for the handling and chemical reprocessing of SNF, which should be cleaner, more effective, result in a reduced waste stream, and be more proliferation resistant.

U.S.-Russian cooperation in these areas could help to ensure the effective realization of initiatives aimed at reducing proliferation risks while increasing the competitiveness of the International SNF Management Center, particularly given the coming large-scale development of nuclear energy.

Production of uranium-plutonium fuel

A more serious problem for the transition to a closed nuclear fuel cycle is Russia's lack of industrial plants to produce mixed uranium-plutonium oxide (MOX) fuel for fast reactors. At present, 10 MOX fuel elements per year can be fabricated at Mayak by the *Paket* installation. To load one BN fast-neutron reactor, 400 fuel elements are needed.

It was expected that a French industrial MOX fuel plant would be provided under the U.S.-Russian Plutonium Disposition Agreement on reprocessing 34 tons of weapons-grade plutonium by each country. Russia is ready to cooperate with France on MOX technology, though it would like to focus on fast reactors. However, it is not prepared to use French equipment if it is supplied on *black-box* terms, i.e. without access to the technology.

RW treatment

Treatment of RW generated as a result of the chemical reprocessing of SNF is another unresolved problem. The creation of a facility to store intermediate- and highly active wastes after their solidification is critical. Russia is currently considering two sites for RW storage facilities: the Nizhnekansk Granitoid Massif (Krasnoyarsk Region), located 25 km away from the location of the future dry SNF storage facility, and Krasnokamensk (Chita Region), where there is uranium mining infrastructure and where the ore reserves will be depleted with time.

Here, the experience of those countries that have made significant progress in building long-term RW storage facilities, including Sweden, Finland, and the United States, would be very helpful. In particular, the experience of the U.S. geological storage site at Yucca Mountain could be beneficial to Russian scientists as an underground laboratory is being constructed to study the impact of solidified RW and spent nuclear fuel on granitoid rock and the environment.

The attractiveness of U.S.-Russian cooperation in the development of new SNF reprocessing techniques and innovative approaches to RW treatment can be seen in the enumeration of the promising trends of collaboration between the two countries in the field of nuclear energy that were prepared in accordance with a request of the Presidents of Russia and the United States made at their May 2002 summit in Russia.[47]

CONCLUSION

The 123 Agreement could becom a framework document that creates the legal basis for long-term cooperation between the two countries in the field of nuclear energy. At present, there are practically no in-depth proposals on joint projects, which could begin soon after the agreement enters into force. However, the U.S. adoption of the Global Nuclear Energy Partnership (GNEP) creates a good opportunity for more active U.S.-Russian cooperation on a closed nuclear fuel cycle.

Among the areas of cooperation that, after appropriate due diligence, may be of interest to Russia, the following can be highlighted:

- ❑ Russian commercial nuclear materials supplies to U.S. NPPs;
- ❑ cooperative efforts to improve the efficiency of light water nuclear reactor operations;
- ❑ establishment of an International SNF Management Center in Russia, primarily with revenues from the storage of foreign SNF containing materials of U.S. origin;
- ❑ the development of innovative nuclear reactors with an emphasis on sodium-cooled fast reactors, including the design of new uranium-plutonium fuel for them, as well as high-temperature gas reactors;
- ❑ commercial involvement of U.S. companies in the joint production of equipment for Russian-designed NPPs and supply of some components;
- ❑ implementation of joint NPP construction projects in third countries;
- ❑ joint design of large capacity light-water reactors (1,500 MWt) with passive safety systems;
- ❑ cooperation in the area of improving the safety and physical security of nuclear reactors and other nuclear installations and materials.

The interests of various Russian nuclear industry players in U.S. cooperation are outlined in *Table 1*.

Table 1.

Interests of Selected Russian Enterprises in Nuclear Cooperation with U.S. Businesses[48]

	Reasons for interest in the early conclusion of a 123 Agreement	
Rosatom	Need to establish regulatory framework for long-term nuclear cooperation on a parity basis	
	Nuclear industry's leadership is personally interested in promoting bilateral cooperation in the nuclear industry, despite stagnating U.S.-Russian relations in other fields	
	Areas of Cooperation	**Projects**
Production Companies		
TVEL	Development of innovative nuclear fuel cycle	Construction of industrial uranium-plutonium fuel production facility
TENEX	International sales of nuclear materials free of anti-dumping duties and other restrictions	1. Commercial sales of LEU for use at U.S. nuclear reactors. 2. Import of SNF containing U.S.-origin materials (Taiwan, South Korea, etc.) 3. Establishment of an International Uranium Enrichment Center (IUEC) 4. U.S. political assistance in attracting third countries to participate in the IUEC
Atomstroyexport	Joint NPP construction projects in third countries	Turkey is one of the most promising potential customers
Rosenergoatom	Increased effectiveness of NPP capacity utilization	1. Increasing NPP performance 2. Reducing operating costs
Atomenergomash	Development of NPP equipment construction in Russia	Establishment of joint ventures for the production of large-scale NPP equipment
Nuclear Fuel Cycle Enterprises		
Zheleznogorsk Mining and Chemical Combine	International Center for SNF Management	Permission to import spent nuclear fuel with U.S.-origin materials to Russia
Angarsk Electrolytic Chemical Combine	International Uranium Enrichment Center	Enrichment of materials ordered by U.S. companies
Research Institutes		
Kurchatov Institute	Development of innovative reactors	High temperature helium reactor
N.A. Dollezhal Research and Development Institute of Power Engineering (NIKIET)	Increased safety of operating reactors; Development of innovative reactors	RBMK reactors
Institute of Power Plant Engineering (IPPE)	Development of innovative reactors	Developing a prototype commercial sodium-cooled fast reactor.
Bochvar Institute of Inorganic Materials	Development of innovative reactors	Developing materials for innovative reactors
	Development of elements of an innovative nuclear fuel cycle	Development of pilot plant producing uranium-plutonium reactor fuel pellets

In order for the entry into the force of a U.S.-Russian 123 Agreement 123 to lead to effective interactions between the two countries in the nuclear sphere, **cooperation on an equal and parity basis** must be established. The two countries have almost no experience in this type of cooperation; earlier interactions have either been of a *donor-recipient* nature, or of a *technology seller-buyer* sort under the condition of the financial collapse of Russia's nuclear enterprises.

Another important provision needed for the establishment of effective, long-term nuclear cooperation between the two countries is the **creation of a technological and commercial, but not political basis** for this cooperation. In this regard, the United States should take the question of Russian-Iranian cooperation off the table as it is simply a political barrier to the development of U.S.-Russian nuclear cooperation. The continued U.S. linkage of the *Iranian issue* to bilateral cooperation will most likely limit cooperation to its present level and force Rosatom to reorient itself to cooperation in the area of innovative technologies with scientists from the European Union and Japan, and, in future, China and India.

Further, the United States needs to remove the negative consequences of its past policies, including sanctions against Russian companies for alleged cooperation with Iran in the creation of a nuclear capability (most importantly—against Mendeleyev Russian Chemical-Technological University), as well as artificial barriers to bilateral commercial cooperation, including the removal of anti-dumping limits on the supply of nuclear materials from Russia.

In the long run, the conclusion of a 123 Agreement should have a positive effect on strengthening the nonproliferation regime through the provision of fuel cycle services, alleviating the need for individual countries to develop their own uranium enrichment and SNF reprocessing capabilities. From this point of view, the Russian initiatives on the creation of international uranium enrichment and SNF reprocessing centers are particularly promising. U.S. participation in the former would give political support to the Russian initiative and help ensure that a large number of states participate in the center's work. Were the United States to agree to allow Russia to import SNF containing U.S.-origin uranium, it would help in the creation of an SNF reprocessing center, and also create the prerequisites for ensuring the removal of SNF from countries that do not possess adequate experience in handling it and are located in regions of heightened vulnerability to terrorist acts—the Middle East in particular.

Notes

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[3] This agreement is commonly knows as a 123 Agreement after Section 123 of the U.S. Atomic Energy Act, which regulates U.S. cooperation with foreign states in the nuclear sphere.

[4] The process of concluding such agreements between the United States and other countries previously took from nine months up to several years. The only nuclear-weapons state, which has a bilateral agreement with the United States on nuclear energy cooperation, is China, which signed a 123 Agreement in 1985 (France and the United Kingdom cooperate with the United State under the umbrella of Euratom). Incidentally, this agreement holds a record in terms of the length of the process for coming into force: almost 152 months.

[5] *Atomic Strategy XXI*, September 2004, pp. 31-32.

[6] Anatoly Zrodnikov and Vladimir Ionkin, "Aleksandr Leipunsky and nuclear power systems for space research," *Yadernaya Energetika,* No. 4, 2003, pp. 24-26.

[7] The uranium-235 fuel load is 25 kg, the total mass of the system 1000 kg. See: Nikolai Ponomarev-Stepnoi, Viktor Talyzin, and Veniamin Usov, "Russian Space Nuclear Power and Nuclear Thermal Propulsion System," *Nuclear News*, December 2000, pp. 33-46.

[8] That said, the sensitive components and technological secrets were not available to U.S. experts.

[9] "Nuclear power units," Buran Spaceship website, <http://www.buran.ru/htm/gud%2026.htm>.

[10] Currently there are 31 nuclear power plant units at ten operating NPPs with 23.2 GWt total installed capacity in Russia. In 2005, Russian NPPs produced 152.9 billion kWh of electric power, which amounts to 16 percent of the nation's entire power output.

[11] Center for Public Information of the Russian Research Center "Kurchatov Institute," January 2006, <http://www.kiae.ru/rus/new/nti/ja06.htm>.

[12] World Association of Nuclear Operators website, <http://www.wanomc.ru/wanomc/IMAGES/MENU/MENU3/281,14>, Slide 14.

[13] "Refueling process at reactor unit 1 upgraded at Balakovo NPP," *SaratovBiznesKonsalting*, June 16, 2006.

[14] Plans call for the design service life of VVER-1,000 reactors (1,150 MWt) built under the NPP-2006 project to be 50 years.

[15] "Rosatom has begun to work on the 'NPP-2006' project," IA Regnum, February 21, 2006.

[16] Atommash and Alstom signed agreement on creation of joint venture for the production of steam turbine equipment for Russian-designed NPPs. Production will take place at the ZiO-Podolsk plant. Total investment will be 300 million rubles. PRIME-TASS, April 2, 2007; "*Atomenergomash* holds talks with Alstom and GE on turbine manufacturing," Interfax, November 20, 2006.

[17] "From a crouching start," *Expert-Ural*, May 16, 2006.

[18] "Leading US and Russian power companies agree to set up a turbine manufacturing joint venture," ITAR-TASS, November 30, 2006.

[19] "APCS in projects for the construction of Russian NPPs abroad," *Atomic Energy Bulletin*, May 2006.

[20] "Atomstroyexport's victory in the tender to construct Belene NPP in Bulgaria," Atomstroyexport press service, October 31, 2006.

[21] In total, during a period of 15 years plans call for putting three reactors with a total capacity of 5,000 megawatts into operation.

[22] Plans call for the construction of a prototype reactor in Finland for the Olkiluoto NPP to be completed in 2012.

[23] To date, no reference units with EPR1600 or AP1000 reactors have been built. Construction of one of the former is being conducted at the Olkiluoto NPP in Finland; the United States plans to build one of the latter in China.

[24] Answer of A.V. Yakovenko, official Russian Foreign Ministry representative, to a question from the ITAR-TASS agency regarding the effectiveness of the U.S.-Russian HEU-LEU Agreement. Russian Foreign Ministry Department of Information and the Press Press Release, May 25, 2005.

[25] Mukhtar Dzhakishev, "The Strategy of Dreams," *Economic Strategy – Central Asia*, No. 1, 2006, pp. 68-73.

[26] "In 10-15 Years Russian Uranium Extraction will Grow at Least 5 Times – Deputy Head of Rosnedr Vladimir Bavlov," Interfax, October 26, 2006.

[27] According to the estimates of Russian experts, the existence of USEC as a middleman has cost Russia about $700 million.

[28] Nikolai Chekhovskii, "Kiriyenko's Napoleonic Plans," *Ekspert Online*, September 28, 2006.

[29] Verbatim record of the meeting of Nikolai Spassky, Deputy Director of the Federal Agency for Atomic Energy (Rosatom), Chairman of International Uranium Enrichment Center Committee, with representatives of the Irkutsk Region authorities and NGOs. Angarsk, September 29, 2006.

[30] James Timbie, Presentation at the 2005 Carnegie Nonproliferation Conference, November 8, 2005, <http://www.carnegieendowment.org/static/npp/2005conference/presentations/Black_Markets_transcript.pdf>.

[31] IPPE Director General Anatoly Zrodnikov, "The Initiative of the President of the Russian Federation on the Creation of Global Atomic Energy Infrastructure," report presented at the IAEA International Conference "Management of Spent Fuel from Nuclear Power Reactors," Vienna, June 19-22, 2006.

[32] The Generation IV International Forum was established in 2001 on the initiative of the United States, and brings together scientists from Argentina, Brazil, Canada, China, France, Japan, Russia, South Africa, South Korea, Switzerland, the United States, the United Kingdom, and Euratom to conduct joint R & D and design new fourth-generation reactors. As promising areas for research the following were chosen: sodium-, gas-, and lead-cooled fast reactors; and thermal reactors: very high temperature, molten salt, and supercritical-water-cooled reactors. Plans call for the newly designed systems to be commissioned by 2030.

[33] Fast Neutron Reactors. *Briefing Paper.* # 98, June 2006. http://www.uic.com.au/nip98.htm

[34] A high-temperature gas-cooled reactor will also be able to dispose of weapons plutonium that has been converted into MOX fuel.

[35] "Reactor being created that will destroy dangerous isotopes," RIA OREANDA, October 28, 2006.

[36] ITA Novosti, November 28, 2006.

[37] "The initiative of the President of the Russian Federation to set up a global infrastructure for the nuclear power industry," presentation by A.V. Zrodnikov, IPPE General Director, at the International Conference at the IAEA on Nuclear Power Reactor SNF Treatment, Vienna, June 19-22, 2006.

[38] Artyom Bouslayev, "Discussion of issues in relation to setting up the International NFC Centers," The official website of the Federal Agency for Atomic Energy, July 14, 2005.

[39] Vitaly Khizhnyak. A Tour of the MCC Storages, or the Director Keeps His Promise. *NuclearNo.ru*. December 13, 2006.

[40] Zheleznogorsk MCC to See the SNF Wet Storage Capacity Increased. *Regnum News Agency*. May 2, 2006.

[41] Yuri Revenko on prospects and problems. *IranAtom.ru* information and analysis website, April 13, 2006. <http://iranatom.ru/news/aeoi/year06/april/revenko.htm>

[42] M.I. Zavadskii, "Evaluation of the possibility of establishing an international regional center for SNF management in Russia," presentation at the international conference "Multilateral Technical and Organizational Approaches to the Nuclear Fuel Cycle aimed at Strengthening the Nonproliferation Regime," June 13-15, 2005.

[43] Report by Tekhsnabexport General Director V.A. Smirnov, "An Analysis of the Possibilities for the Conclusion of International Contracts to Import Irradiated Fuel Assemblies of Foreign Origin to the Russian Federation for Temporary Storage and Processing: Status and prospects of the global market for spent nuclear fuel," Second Session of the Special Commission on Questions of the Import to Russian Territory of Irradiated Fuel Assemblies of Foreign Origin, December 15, 2003.

[44] Estimates by Tekhsnabexport, which has been given the right by the Russian government to conclude deals relating to foreign SNF.

[45] Mikhail Solonin, report entitled "The handling of spent nuclear fuel as a factor in the development of nuclear energy," presented at the international conference "Irradiated Nuclear Fuel Management 2002: new initiatives for Russia," September 9, 2002.

[46] Valery Govorukhin, "In ten years the global volume of unreprocessed SNF will nearly double," December 11, 2003, <http://www.tvel.com.ua/news/1543/>.

[47] In a document entitled "Joint Statement by President Vladimir Putin and President George Bush on the New U.S.-Russian Energy Dialogue," the leaders of the two countries requested the creation of a joint expert group on innovative nuclear power technologies. The cochairman of the group from the Russian side was First Deputy Minister of Atomic Energy Lev Ryabev. According to the presidents' statement, a report on possible areas of cooperation in the area of innovative nuclear reactors and the nuclear fuel

cycle was to be prepared within 60 days. A meeting was held in Washington in order to exchange information on areas of R&D viewed as promising. On July 31, 2002, the joint group presented its report to Minister of Atomic Energy Aleksandr Rumyantsev and Secretary of Energy Spencer Abraham. It emphasized the similarities in research areas. A proposal was made to hold meetings on specific subjects and discuss the details of possible cooperation as early as the fall of 2002, if political differences could be overcome (i.e. a 123 Agreement signed).

[48] The author does not intend to list all Rosatom institutes, but only to illustrate the interests of some Russian research institutes in a 123 Agreement.

Alexei Obukhov

NUCLEAR WEAPONS AND CHRISTIAN ETHICS

Since the middle of the 20th century, an unparalleled threat has loomed over mankind—the atom bomb. The revolting escapades of the fundamentalist terrorists can neither obscure nor avert this threat. Of course, there are, apparently, worse threats, such as hidden galaxies that, according to astrophysicists, are moving from the outer reaches of the cosmos towards the solar systems of the Milky Way. But these are the result of cosmic forces, for which the human race cannot be held to account.

The atom bomb is an entirely different matter. The acquisition of a human war-making power that can wipe out earthly civilization in one stroke is a circumstance most extraordinary. On an historical scale, the harnessing of nuclear power—whether for peaceful or military purposes—is, perhaps, the most fateful scientific and technical achievement of the turbulent 20th century. Perhaps Alexander Blok's tragic outlook on the world was not so accidental:

> The twentieth century...Still more homeless
> The gloom of life, still more terrifying;
> Still more black and more enormous
> Falls the shadow of Lucifer's wing.[1]

Up to this point, it had been understood that it was the Creator—the Supreme Being—who was unquestionably responsible for the continuation of life of the human race. In the years before the war, the religious philosopher Sergei Bulgakov wrote:

"Although a person has the opportunity to hasten his own demise through suicide, he does not have the ability to put off its inexorable approach; as for the death of the world, he knows neither the day nor the hour, for it is completely according to the will of the almighty Heavenly Father."[2]

Having created and amassed murderously destructive weapons such as the atomic bomb, mankind arrogated unto himself divine prerogatives, for the destruction of human civilization as a result of nuclear war would be tantamount to Bulgakov's "death of the world"—since we have no reliable knowledge about the existence of intelligent life elsewhere in the universe. The question could be raised: Is a man who is sinful by nature, capable of rationally handling something that has superhuman potential?

TWO PHILOSOPHICAL APPROACHES

During the years that have passed since the invention of nuclear weapons, the public's attitude towards them has been somewhat transformed. At first, many people regarded the nuclear bomb as something exotically menacing, yet at the same time too extravagant to be used in an actual war—the cruel and, to a great degree, politically motivated American bombings of two Japanese cities notwithstanding. Afterwards, people became accustomed to the

nuclear bomb as an unavoidable element of the Cold War between the socialist bloc and the capitalist camp.

Against this background, two contrasting approaches to the nuclear problem emerged: that of the state-minded activists and that of the pacifists. On both sides of the political and ideological front, state-minded activists supported and promoted the nuclear arms race in the interest of national defense. The pacifists, on the other hand, criticized the hydrogen bomb as a weapon of genocide and called for a ban on the use of nuclear weapons, an end to testing them, and, ultimately, nuclear disarmament.

Gradually, as high-ranking politicians became more convinced of the dangers posed by the uncontrolled accumulation of nuclear weapons, elements of the pacifist ideology penetrated the thinking of the state-minded activists as well. This motivated the main rivals in the "bipolar" standoff between the Soviet Union and the United States to begin negotiations aimed at limiting and reducing their nuclear arsenals. The concept of nuclear non-proliferation was thus born, strengthened through an international treaty, and became an important instrument for promoting global stability.

Is the atom bomb something good or something evil? Should we celebrate its invention or should we mourn? Is it possible to form an unequivocal judgment on this matter?

Evidently, this issue cannot be resolved simply by voting. The result of such a referendum, say, among the residents of Hiroshima or Nagasaki would be predictable: it would be negative. This is confirmed by the ceremonies held every year in these cities to commemorate the victims of the dropping of the atomic bombs. Nuclear scientists, however, might see it differently, since they are not prepared to be indiscriminately included among those who visit evil upon human beings.

Not that long ago, Nikolai, the metropolitan of Nizhny Novgorod, found an unexpected facet of the whole nuclear issue when he made an observation about the results of the work done by researchers at the Arzamas-16 nuclear laboratory: "Perhaps it was the prayers of Father Seraphim that helped create the weapons that stood guard over Russia and for the well-being of which Saint Seraphim prayed by the stone in the Sarov Forest."[3]

There is much that is seductive in this argument. In a certain sense it follows the tendency to bolster the authority of the Orthodox Church in Russia. All the same, the inclusion of this postscript referencing a popular saint in the state programs to develop and improve the Soviet Union's nuclear weapons unavoidably raises questions. Something in the depths of one's soul resists lending the aura of sainthood to the atomic bomb, the use of which would usher in Armageddon.

Atomic weapons gave rise to a host of problems in global politics. The moral and ethical contemplation of the phenomenon of the atomic bomb does not allow for simplification. Here, religiously partisan inflexibility interferes with objectivity.

American physicists, who worked on developing the atomic bomb at great personal sacrifice, at first focused on countering the nuclear ambitions of Hitler's Germany, which, fortunately, were never realized. Afterwards, the founding fathers of the United States' nuclear capability provided for the "deterrence" of Stalin's communism. In the Soviet Union, this American activity was perceived in a different light—as a challenge and direct threat to its security; hence, the corresponding motivation of Soviet scientists and weapons designers working at the secret Arzamas-16. Under conditions of extreme political confrontation, the boundary between "good" and "evil," where nuclear weapons were concerned, was interpreted in the United States and the Soviet Union from opposing positions. Simply put, a high moral and ethical purpose was accorded only to the nuclear weapons of one's own nation, while the moral and ethical symbolism served the interests of political propaganda.

Tense discussions about precisely which nuclear weapons—Soviet or American—were a negative influence on the global balance of power were conducted even at the diplomatic level. The following story comes to mind:

When U.S.-Soviet negotiations on nuclear and space-based weapons were renewed during the first half of 1985, the U.S. side tried to show that Soviet heavy ICBMs (a total of 3,000 nuclear warheads) represented a destabilizing element in the nuclear standoff and, conse-

quently, should be the first to be reduced. To counter this approach, the Soviet side called for a reduction that would take into consideration the long-established structures of the strategic nuclear forces (SNF) of the Soviet Union and the United States and would not make it necessary to modify the weapons, given the immense additional expense that this would unavoidably entail. Claims regarding the supposedly destabilizing characteristics of the Soviet SNF were declined by the Soviet delegation.

Echoes of the negotiations' rhetoric reached journalists. A cartoon appeared in the U.S. newspaper *International Herald Tribune* depicting a U.S. *MX* ICBM and a Soviet *SS-18* heavy ICBM as two combatants squaring off. On the casing of the U.S. missile, along with its official designation, *Peacekeeper*, the cartoonist added an inscription saying that it was a noble, peaceful, and even god-fearing weapon. In contrast, the Soviet missile was characterized with particularly negative epithets: evil, aggressive, and inhuman. It's not without reason that its NATO classification is *Satan*.

A cartoon of the times, depicting "good" U.S. "Star Wars" fighters combating the Soviet "evil empire."

During an official UN event, when speaking with his American colleague Ambassador James Goodby, the author showed him a clipping of this cartoon to support his argument. I wanted to re-emphasize the point that one should not use national origin to discriminate between nuclear weapons systems that are comparable from the standpoint of their influence on the strategic situation. The U.S. representative, it seemed to me, recognized a subtle sense of humor in the cartoonist. The discussion surrounding the heavy ICBMs, however, would not subside for many years to come.

"EVIL IS GOOD"

The nuclear bomb did not fall from the sky onto the head of a stunned human race—it was the product of a long race to acquire a superweapon. Politics—and the persistent tendency to resolve emerging international problems with the threat or actual use of force—encourages military and technological rivalry.

Violence and war have been a part of human society since prehistoric times. There was a time when it was fashionable to become caught up with calculating the relative periods of war and their absence in world history. It turns out that peace makes up a very small percentage of the total. In the final analysis, peace and war evidently have always existed side-by-side on planet Earth.

In one of his films, the brilliant filmmaker Stanley Kubrik masterfully depicts the evolution of the tools of armed conflict. Two groups of hairy prehistoric *homo sapiens* are making their way towards one another through a dense thicket of trees. In the clearing a fight between them breaks out over living space. The cavemen gleefully beat each other senseless or to death with whatever comes to hand. Only two combatants remain alive. One of them grabs a nearby white

shinbone—the leftovers of some previous battle—and inflicts the final blow. The victor falls on his back and, in a gesture of triumph, throws his weapon into the sky. Suddenly the bone, circling higher and higher like a bird into the blue sky, turns into a spaceship floating in orbit, as if it were something from "Star Wars."

Today, a number of countries possess weapons of unprecedented power. Mankind has acquired the ability to commit an act of self-annihilation. The worst, however, has not come to pass. Why so?

Proponents of an increase in nuclear might have an unequivocal answer: it is because the countries participating in the military standoff mutually deter one another via intimidation. The fear of the ultimate retaliation is what keeps both sides from resorting to nuclear aggression.

The primary moral deficiency of nuclear weapons—their excessive and indiscriminate destructive force—instills a terror that stupefies even the most cocksure of strategists. It turns out that the moral deficiency of nuclear weapons is not at all a vice, but rather a virtue, inasmuch as it prevents war from erupting. An evil beginning ends up turning into good.

The moral and ethical duality of the atomic bomb was noted at the dawn of the nuclear age by Reinhold Niebuhr, a prominent American theologian and political thinker:

"…the necessity of using the threat of atomic destruction as an instrument for the preservation of peace is a tragic element of our contemporary situation. Tragedy elicits admiration as well as pity because it combines nobility with guilt."[4]

Could the nuclear bomb be considered an eloquent expression of the contradictory and tragic development of human civilization as a whole?

FROM THE PERSPECTIVE OF THE STATE-MINDED ACTIVISTS

The Cold War, which broke out after the defeat of the Axis powers and which essentially represented a systemic, decades-long global crisis in international relations as a whole, was distinguished by an extraordinary increase in tensions in the global arena. This gave rise to acute crises and, occasionally, major wars on the Korean Peninsula, in Indochina, in the Middle East, over Berlin and Cuba, and so forth. The Cold War had numerous components. Its engine was, first and foremost, the political and ideological confrontation between socialism and capitalism.

In the Soviet Union, politicians were displeased by Winston Churchill's Iron Curtain speech that he gave in March 1946 in Fulton, Missouri, with the American president in attendance. It was not entirely clear from the speech of the British prime minister, who, specifically, had lowered the curtain, but, from that moment on, cartoons depicting Churchill in the newspaper *Pravda* were of an exclusively hostile nature. The capitalist west was proclaimed to have "curtained off" the Soviet Union in an attempt to undermine the socialist order. The response of the Soviet leadership came during the 19th Party Congress (1952), at which Stalin declared that the West had thrown overboard the banner of bourgeois-democratic liberties. This was a severe condemnation.

The second, no less significant, component of the Cold War was the tense U.S.-Soviet competition to amass nuclear weapons. In 1945, neither the leadership of the United States, nor that of the Soviet Union, was inclined to contemplate the moral and ethical aspects of the atom bomb. Atomic weapons represented, above all, a new and inescapable dimension of power politics. Matters concerning these weapons were filed away under the heading of "national security," and only a limited circle of highly trusted people had access to the information. Atomic programs were given the highest priority in both Moscow and Washington. Here, ethics were not a consideration—only politics. That's how the state-minded activists thought and acted.

Harry Truman, having assumed the U.S. presidency upon the death of Franklin Roosevelt in April 1945, and disturbed by the Soviet Union's growing international stature as a result of WWII and subsequent geopolitical shifts, was concerned less with the alliance than about confrontation with Moscow. Hence, the discussion that Truman initiated with Stalin at the Potsdam conference in the summer of 1945 in regard to American weaponry that had become unprecedented in its power as a result of the first test of an atom bomb at Alamogordo. The president sought to translate atomic might into the language of diplomatic pressure.

At Potsdam, Stalin, who was warned in advanced by his intelligence services about the impending American test, did not appear to be alarmed. According to Georgi Zhukov, upon returning from a session at the conference, the following exchange occurred among the members of the Soviet delegation: "…Stalin told Molotov in my presence about a conversation he had with Truman. Molotov immediately replied: 'They upped their ante.' Stalin laughed and said: 'Let them. We should talk this over with Kurchatov about working faster.' I understood that he was talking about the atom bomb."[5]

Stalin did not leave any notes for posterity. His death was sudden. His views on the atomic bomb are only known from what was said by the people who knew him.

The former Soviet intelligence agent Pavel Sudoplatov tells about one noteworthy episode. At the end of 1945, a U.S. delegation headed by Secretary of State James Byrnes arrived in Moscow to participate in a session of the Council of Foreign Ministers. The delegation included James Conant, one of the heads of the American nuclear project, as well as Averell Harriman, the U.S. ambassador to Moscow. The American representatives proposed to the Soviet side that they begin to cooperate in the area of atomic energy, and they also offered to share the secrets of the atomic bomb with the Soviets in exchange for a Soviet promise not to produce it. Essentially, this offer was in the spirit of the Baruch Plan that was subsequently put forward and which was rejected by Moscow as being designed to consolidate the American atomic monopoly.

Sudoplatov, who was officially presented to the Americans as Molotov's assistant, recalls: "…On the 22nd of December, at a dinner in honor of the American delegation at the Kremlin, an important conversation took place that I was privy to in my capacity as one of those who was transcribing this conversation in detail. Molotov, commenting on the remarks made by Byrnes and Conant about a possible schedule for transferring data about the U.S. atomic bomb to the Soviet Union, joked: 'Would you, by any chance, like to retrieve from your vest pocket the drawings of the atomic bomb that you brought with you to Moscow?'"

Stalin abruptly cut Molotov off. Even I was astonished by his disrespect towards his comrade-in-arms in the presence of the Americans. I will always remember his words:

"Atomic energy and the atomic bomb—these belong to all mankind, they are not a topic for jokes. I propose a toast to the great American physicists who made this remarkable discovery."[6]

Presumably, Stalin was just as distrustful of U.S. diplomacy. At that moment, however, he evidently had not made up his mind about the conceptual principles that would later form the basis of the "Baruch Plan," and he considered it necessary first to clarify the substance of the American position. The atomic problem was too serious for hurried and superficial thinking. This is why Molotov's joke was neutralized.

Another eyewitness account of Stalin's views on nuclear weapons is provided by Milovan Djilas, who, in early 1948, was a guest at one of Stalin's traditional midnight dinners and recounts the following words of the supreme leader:

"Stalin was speaking about the atomic bomb: 'It is a powerful thing, pow-er-ful!' His words were full of admiration, which let everyone know that he would not rest until he also had this 'powerful thing.' He never mentioned, though, that he already had it, nor that the Soviet Union was already developing it."[7]

In 1949, on the eve of the first Soviet atomic bomb test, Yuliy Khariton, one of the directors of the Arzamas-16 nuclear center, briefed Stalin about the progress that had been made. After his report, Stalin asked: "Would it be possible to build two bombs out of the same amount of plutonium?" Khariton replied that this was impossible. As an experienced weapons specialist, Stalin would delve deep into details. Incidentally, the code for the first Soviet atomic bomb was *RDS-1*, or *Stalin's Jet-Propulsion System-1*. The second one (which was tested in 1951) was coded *RDS-2*. In the West, the Soviet bombs were dubbed *Joe-1* and *Joe-2.*[8]

As is well known, at the dawn of the atomic era, the prominent Danish physicist Niels Bohr, and before him, the Englishman Ernest Reserford, expressed doubts as to whether mankind would ever be able to learn to master the energy of the atom. According to Bohr, in order to do so, the economy of an entire nation would have to be turned into a huge factory working exclusively to develop a bomb.

After 1945, however, due to political expediency, Washington and Moscow would not spare any resource to develop, perfect, and accumulate a nuclear and, subsequently, nuclear missile capability. Going down this road became something of a national idea (obsession) for both countries. Given the military and political confrontation, the concept of deterrence, which was enjoined to prevent nuclear conflict, intensified the nuclear rivalry. The arsenals of nuclear

warheads held by both superpowers numbered in the tens of thousands. Nuclear cataclysm was a very real threat hanging over the world. Herein lay the destructive logic of the Cold War, in accordance with which an instrument of deterrence was converted as a result of the unrestrained race for military superiority into a weapon of nuclear holocaust.

A great deal of effort was spent preventing this slide and detouring world politics towards the limitation and reduction of nuclear weapons. The most important impetus (as well as a consequence) of this change in direction was the weakening and, subsequently, the end of the Cold War.

TOWARDS A PRE-EMPTIVE STRIKE

As has already been noted, another feature of Cold War politics, along with the nuclear arms race, was the irreconcilable ideological rivalry between the world of capitalism led by the United States and the world of socialism as it was personified by the Soviet Union and its allies. The Soviet leadership assumed that the outcome of WWII confirmed the historical principle according to which mankind would progress towards a communist order.

Already in retirement, Molotov, when speaking with Felix Chuyev about the mood of the Kremlin in the post-war period, noted:

"Stalin steered matters towards the death of imperialism and the ascension of communism... We needed peace, but according to American plans, two hundred of our cities were subject to simultaneous atomic bombardment. Stalin's thinking was as follows: 'World War I pulled one country out of capitalist slavery. World War II created a socialist system, and the third world war will put an end to imperialism forever.'"[9]

For Molotov, the main point was the ideological principle, the vision of the historic perspective. But his thinking also implies, as far as one can tell, a victorious outcome for the forces of socialism in the impending nuclear conflict.

Two forces were colliding in the world arena: the American side, which placed its hopes in its monopoly of atomic weapons, and the Soviet side, with its huge conscript army that had demonstrated its effectiveness in combat on the battlefields of WWII. Well-informed politicians were well aware that the time was near when the Soviet Union would have its own atomic weapons.

The combination of both factors—the political and ideological rivalry and the reliance on atomic weapons—made the stand-off between the superpowers particularly explosive.

On the American side, a typical example of ideological intolerance reinforced by atomic ambitions was James Burnham's book *The Struggle for the World*, which was published in 1947, not long after Churchill's "Iron Curtain" speech in Fulton. Burnham analyzed the world situation from two vantage points: from the angle of aspirations to global dominance (here, in his opinion, there were two genuine contenders—the United States and the Soviet Union) and from the point of view of the role that atomic weapons would be able to play in global politics.

Burnham recognized that the atomic bomb represented a mortal threat to mankind. If it became accessible to several nations, war with all its destructive consequences would be inevitable. In order to avoid this, according to Burnham, what is needed is a monopoly on the atomic bomb. Such a monopoly would become possible by establishing a global empire. If it is built by the Soviet Union (to confirm this possibility, Burnham provides detailed diagrams that are intended to show the global scale of Soviet expansionism), then a totalitarian order will emerge. If, however, the United States ends up heading the empire, then it will be about the triumph of democracy.

Burnham demanded that Washington stop vacillating in its foreign policy between isolationism and the appeasement of communism. The doctrine of non-interference in the internal affairs of other nations should also be rejected.

If the Soviet Union obtains atomic weapons, it will deploy them and win victory, warned Burnham. If the United States, however, would stop its foot-dragging and inflict pre-emptive atomic strikes, victory would be theirs. Burnham wrote: "Let us suppose... that when the war begins the Soviet Union does not yet have atomic weapons. Then, of course, there will be no immediate retaliation to the initial mass atomic attack by the United States. This means that the first stage of the war will be a gigantic victory for the United States."[10]

The overall conclusion of Burnham's book was as follows: "The reality is that the only alternative to the communist World Empire is an American Empire which will be, if not literally worldwide in formal boundaries, capable of exercising decisive world control."[11]

Plans for pre-emptive war put forward by Burnham and other American ideologues remained unneeded. Sober-minded politicians in Washington could not fail to take into account that the United States did not have enough war matériel to guarantee that, even with a nuclear monopoly, it could inflict damage on the Soviet Union with impunity. If it started a war, it could lose Western Europe. Then, in August of 1949, the atom bomb appeared in the Soviet arsenal. The KB-11 design bureau at Arzamas-16 had caught up to the Manhattan Project on which scientists at Los Alamos were working.

A TERRIBLE SIN

Another influential school of American political thought put forward recommendations that essentially rejected the dangerous radicalism of the adherents of the pre-emptive use of atomic weapons. To a great degree, this was the tone of George Kennan's article "The Sources of Soviet Conduct," which appeared under the pseudonym "X" in the July 1947 issue of *Foreign Affairs*. In it, Kennan proposes focusing on the containment of communism through primarily political means.

In his memoirs, Kennan characterized the confused state of mind among politicians in Washington in the early post-war years as follows:

"At that time, it was almost impossible to see how Europe could be saved. We were still caught in the fateful confusion.... The economic plight of the continent was rapidly revealing itself as far worse than anyone had dreamed, and was steadily deteriorating. Congress was in an ugly frame of mind, convinced that all foreign aid was "operation rathole." The Communists were at the throat of France. A pall of fear, of bewilderment, of discouragement, hung over the continent and paralyzed all constructive activity. Molotov sat adamant at the Moscow council table, because he saw no reason to pay us a price for things which he thought were bound to drop into his lap, like ripe fruits, through the natural course of events."[12]

While sharing Burnham's displeasure towards "soft-headed liberals," who were inclined towards the "appeasement" of communism, Kennan nevertheless rejected the argument that the Soviet Union was willing to wage war. In his unsent letter to Walter Lippman (1948), he stressed:

"The Russians don't want to invade anyone. It is not in their tradition. They tried it once in Finland and got their fingers burned. They don't want war of any kind. Above all, they don't want the open responsibility that official invasion brings with it. They far prefer to do the job politically with stooge forces."[13]

Given these premises, Kennan explains the meaning of his anonymous article, which ushered in an era in Washington politics:

"In writing the X-Article, I had in mind.... ...the fact that many people, seeing that these concessions had been unsuccessful and that we had been unable to agree with the Soviet leaders on the postwar order of Europe and Asia, were falling into despair and jumping to the panicky conclusion that this spelled the inevitability of a eventual war between the Soviet Union and the United States.

It was this last conclusion that I was attempting, in the X-Article, to dispute. (...) ...I saw no necessity of a Soviet-American war.... There was, I thought, another way of handling this problem.... This was simply to cease at that point making fatuous unilateral concessions to the Kremlin, to do what we could to inspire and support resistance elsewhere to its efforts to expand the area of its dominant political influence, and to wait for the internal weakness of Soviet power, combined with frustration in the external field, to moderate Soviet ambitions and behavior. The Soviet leaders, formidable as they were, were not supermen. Like all rulers of all great countries, they had their internal contradictions and dilemmas to deal with. Stand up to them, I urged, manfully but not aggressively, and give the hand of time a chance to work.

This is all that the X-article was meant to convey."[14]

Thus, Kennan advocated a firm policy of containment of communist expansionism. The U.S. Marshall Plan, which provided financial help to rebuild the economies of Western Europe, and the establishment of the North Atlantic Treaty Organization in 1949, can be considered a practical expression of that policy. At the same time, however, he was not one to toy with the atomic bomb in a threatening manner. Kennan did not advocate moving away from the perspective

of a sharp rivalry between capitalism and socialism, but he was categorically against provoking a military confrontation between the two systems, especially using atomic weapons.

In the years to come Kennan continued to remain faithful to this far from inconsequential attitude of his towards the atomic factor in foreign policy.

Kennan was not alone in his beliefs. In early 1952, at the height of the war on the Korean Peninsula, the influential thinker Reinhard Niebuhr, while heaping criticism on communist ideology and the Soviet regime that America was confronting, and worried about the turbulent political movements in Asia, also warned against relying on military, economic, and technological superiority as a means of altering the course of history.

With obvious sympathy, Niebuhr concurred with the apprehensions towards U.S. foreign policy that had become widespread in Western Europe:

"The fact that the European nations, more accustomed to the tragic vicissitudes of history, still have a measure of misgiving about our leadership in the world community is due to their fear that our 'technocratic' tendency to equate the mastery of nature with the mastery of history could tempt us to lose patience with the tortuous course of history. We might be driven to hysteria by its inevitable frustrations. We might be tempted to bring the whole of modern history to a tragic conclusion by one final and mighty effort to overcome its frustrations. The political term for such an effort is "preventive war." It is not an immediate temptation; but it could become so in the next decade or so."[15]

Like Kennan, Niebuhr advised American leaders not to lose their heads and to wait out the "long run" of history while taking such measures as are necessary to combat the more immediate perils.[16] The United States, according to Niebuhr, "should be ready to engage in a patient chess game with the recalcitrant forces of historic destiny."[17]

Thus, Niebuhr, in contrast to Burnham, warned against unleashing a pre-emptive war against the Soviet Union. The American theologian, incidentally, captured the moral ambivalence towards nuclear weapons. Niebuhr wrote that a nation such as the United States:

"...finds itself the custodian of the ultimate weapon which perfectly embodies and symbolizes the moral ambiguity of physical warfare. We could not disavow the possible use of the weapon, partly because no imperiled nation is morally able to dispense with weapons which might insure its survival. All nations, unlike some individuals, lack the capacity to prefer a noble death to a morally ambiguous survival. (...) Yet, if we should use it, we shall cover ourselves with a terrible guilt. We might insure our survival in a world in which it might be better not to be alive."[18]

DOUBTS IN SCIENTIFIC CIRCLES

Doubts about the moral and ethical legitimacy of atomic weapons as a means to achieve political ends began rather early to worm its way into the souls of American theoretical physicists.

At first, everything in this regard had been going smoothly—working in the atomic field to overtake Nazi Germany did not raise any concerns. The very idea of the potential for an atomic monopoly in Hitler's hands spurred a redoubling of efforts. The situation began to change when the possibility of using the atomic bomb against Japan surfaced.

In the summer of 1945, while employed by the Los Alamos laboratory, Edward Teller, at the behest of Leo Szilard (who at that time was working at the University of Chicago), attempted to organize a petition of scientists to call upon the Truman administration to reject the notion of bombing Japanese cities, citing humanitarian considerations and the lack of an obvious military necessity. When the head of the Manhattan Project, Robert Oppenheimer, found out the nature of the document that Szilard was behind, he strongly resisted the initiative, indicating that the issues surrounding the use of nuclear weapons had to be decided exclusively by politicians, who have the trust of voters and who, in their actions, rely on being well-informed about the numerous factors inaccessible to the general public. Teller backed down, acknowledging the cogency of Oppenheimer's arguments.

The doubts were revived when information about the aftermath of the bombing of Hiroshima on August 6, 1945, reached Los Alamos. Teller recalls:

"The colloquium that week was a viewing of the early pictures showing the destruction of Hiroshima. I remembered Szilard's suggestions; the scenes were particularly troubling and I wondered whether such devastation had been necessary. Then, just three days later, on August 9, 1945, the plutonium bomb was dropped on Nagasaki. I remember telling Laura Fermi, 'If this goes on, I want to leave.' But then, on August 14, the big news arrived: Japan had surrendered! The war was over. Celebrations, elation, and relief continued until late in the night. And I was fully as glad as everyone else. But I continued to regret that the bomb had not been demonstrated."[19]

In Teller's opinion, a nighttime explosion at a height of 10 kilometers over Tokyo Bay would have been sufficient to induce the requisite psychological effect, convincing the Japanese of the futility of resistance while, at the same time, sparing an inordinate number of victims. During the late 1940s and early 1950s, the work that had begun in earnest to develop the hydrogen bomb provoked a new round of discussion in the United States with respect to the moral legitimacy of nuclear weapons. Teller and several other prominent American scientists had no reservations about the issue. No restraint on the part of the United States in this, they believed, would stop corresponding Soviet programs. Moreover, the United States could not allow itself to fall behind militarily without risking its national security interests.

There was, however, discord over this approach. Hans Bethe managed to avoid moving to Los Alamos to take part in the work on the hydrogen bomb. A secret report of the General Advisory Committee, signed by James Conant and Robert Oppenheimer, among others (although not by Glenn Seaborg, who adhered to a different point of view), contained a warning against developing the hydrogen bomb in view of its "limitless destructive power and the danger that it might become a 'weapon of genocide.'" A separate report signed by Enrico Fermi and Isidore Rabi laid out similar views.[20]

In March 1950, Albert Einstein expressed the anxiety of this group of scientists in an article entitled "Arms Can Bring No Security":

"The armament race between the United States and the Soviet Union, originally supposed to be a preventive measure, assumes a hysterical character. On both sides, the means to mass destruction are perfected with feverish haste behind the respective walls of secrecy. The H-bomb appears on the public horizon as a probably attainable goal. Its accelerated development has been solemnly proclaimed by the President. If successful, radioactive poisoning of the atmosphere, and hence annihilation of any life on earth, has been brought within the range of technical possibilities. The ghostlike character of this development lies in its apparently compulsory trend. Every step appears as the unavoidable consequence of the preceding one. In the end, there beckons more and more clearly general annihilation."[21]

Essentially the same doubts roiled the minds of leading Soviet physicists.

In 1955, after the first comprehensive test of a Soviet hydrogen bomb, the leaders of the atomic project—academicians Kurchatov, Alikhanov, Aleksandrov, and Vinogradov—sent a letter to the party leadership saying that, with the development of superweapons, a world war becomes impossible. It would lead to the destruction of mankind and, therefore, a new kind of international politics was necessary. Malenkov supported this pacifist letter, while Khrushchev took advantage of his party comrade's political shortsightedness to overthrow him.[22]

The introduction of pacifist or, better to say, common sense perceptions into the realm of the state-minded activists did not always go smoothly. A typical episode is provided by academician Andrei Sakharov in his memoirs. After the aforementioned successful test of a hydrogen bomb at the Semipalatinsk Test Site in November 1955, the participants of that event were invited to a reception with the inner circle of Marshal M. I. Nedelin, the Commander in Chief of the Rocket Forces. Sakharov recalls:

Nedelin nodded to me, inviting me to propose the first toast. Glass in hand, I rose and said something like: "May all our devices explode as successfully as today's, but always over test sites and never over cities."

The table fell silent, as if I had said something improper. Everyone froze. Nedelin smirked and he, too, arose glass in hand and said:

"Allow me to tell a parable. An old man wearing only a shirt is praying before a lit icon: 'Guide and harden me, guide and harden me.' His old wife, who is lying on the stove, can be heard to say: 'Just pray to be hard, old man, I can guide it in myself.' Let's drink to getting hard."

The Marshal's parable was not meant to be a joke. Nedelin considered it necessary to rebut my unseemly pacifist sentiment and to put me and anyone else who might be thinking along the same lines in our place. The point of his story (half lewd, half blasphemous, which made it even more unpleasant) was clear to me and everyone else. We—the inventors, scientists, engineers, and craftsmen—had made a terrible weapon, the most terrible weapon in human history; but its use would lie entirely outside our control. The decisions—'the guiding,' in the words of the parable—would be made by them—those who were at the top, the top of the Party and military hierarchy.[23]

The situation was practically identical to the argument between Teller and Oppenheimer at Los Alamos in 1945, with Nedelin playing the role of Oppenheimer.

Global public opinion did not remain indifferent to the militarization of international politics and the increasing nuclear danger, setting in motion a broad movement for peace. Together with leading scientists, politicians, artists, and social activists, representatives from churches of various denominations played a highly visible role in this movement.

In concert with this initiative, Soviet diplomacy started campaigning for a multilateral agreement that would lead to the incremental banning and destruction of nuclear weapons under international supervision.

Within the context of the Cold War, these proposals seemed propagandistic to many. It is possible that, to a certain extent, they were, but at the same time, this was propaganda that was for peace and against nuclear war and nuclear blackmail. It played a positive role by showing that the threat of nuclear war could be categorically eliminated only with the complete and total destruction of nuclear arsenals.

It became necessary, however, to further escalate the arms race, set off what was known as the *kuzkina mat,* a bomb with an explosive yield in the dozens of megatons, and, in October 1962, to endure the acute Cuban missile crisis in order for politicians to finally understand the necessity to pull back; to not build up, but rather to limit and reduce nuclear arms for the sake of their own security and international stability.

A LESSER EVIL

The mechanism of nuclear deterrence is an outcome of the politics of confrontation typical of the Cold War years. To no less a degree, however, this concept was an almost unavoidable product of the existence of nuclear weapons in the hands of two or more nations. The nuclear bomb in the hands of another country is too terrifying a weapon not to see it as a potential threat to your own security. Therefore, if, for example, there are two nations, each having a nuclear deterrent arsenal, a situation of *mutual* deterrence automatically arises between these two nations.

Nevertheless, apparently following Soviet tradition, Russian military doctrine avoids using the term "mutual" in this context. At any rate, insofar as it applies to U.S.-Russian nuclear deterrence, this would seem to be an objective, existential given.

At some point around the early 1960s, the concept of "mutual assured destruction (MAD)" became the most important element of the system of nuclear deterrence. This is the punishment that the participants in deterrence promise to each other in the event of the outbreak of nuclear war. This mutual threat deters them from aggression—peace, i.e. nuclear stalemate, reigns.

The corresponding government agencies assiduously worked to ensure that the promised destruction would be virtually guaranteed. At some point, U.S. Secretary of Defense Robert McNamara, declared the precise levels of destruction necessary to ensure such guarantees. For his part, the systems theorist Herman Kahn presented detailed analyses of the extent of the damage that would be inflicted by either the Soviet Union or the United States depending on the number of nuclear explosions on their territory. Eventually, the "futurology of nuclear war" all but developed into a specialized branch of political science.

Within the framework of deterrence, the absence of war is predicated upon the threat of mutual nuclear destruction, i.e., the balance of terror, which, in and of itself, creates serious complications for anyone who would attempt to evaluate the mechanism of deterrence from the standpoint of Christian ethics. Perhaps, as a consolation, an argument could be made for

choosing the lesser of two evils: nuclear war is bad, yet peace guaranteed by MAD, while not ideal, is vastly better than war. It was not without reason that, in 1646, the staunch adherent and interpreter of Christian morality and classical jurist Hugo Grotius noted: "...When it is impossible to avoid making a choice, then the lesser evil replaces good."[24]

IS DETERRENCE SUSTAINABLE?

The question arises: how sustainable is nuclear deterrence? Is it possible to rely, with complete assurance, on this mechanism to keep the peace?

The ideology of deterrence in its current form is supported by many theoretical arguments, from concrete military calculations to the strictly psychological. Deterrence is counted on to influence the behavior and perception of reality among certain people (government leaders and their military subordinates), who, at the same time, are of sound mind and not subject to influence by various fanatical factions. In a world vulnerable to irrational motives, the logic of deterrence evaporates. Admittance to the club of nuclear deterrence has to be closed to extremists.

One central tenet is the concept of the credibility of deterrence. In order for the hand of a putative enemy to be stayed from trying to reach for the nuclear button, he has to be aware that the potential victim of his aggression possesses enough military power to inflict irreparable damage in an unavoidable retaliatory strike. But that, in and of itself, is not sufficient. Deterrence is only truly credible if a potential aggressor knows that the intended victim of his attack has the determination to unleash his nuclear power in retaliation. The concepts of credibility and determination are linked within the framework of deterrence strategy.

Having the necessary will is not a trivial matter. It is possible to be confronted with a serious dilemma such as reconciling oneself, on the one hand, to the loss of major targets on one's territory as a result of an enemy nuclear missile attack or, on the other, to give the "o.k." to a retaliatory nuclear salvo with the realization that this will result in total nuclear collision. These are precisely the options afforded by the "nuclear suitcase," which is always close at hand among the top officials of the nuclear superpowers. As noted in a report issued by the Scowcroft Commission (1983):

"Deterrence is not, and cannot be, a bluff. In order for deterrence to be effective we must not merely have weapons, we must be perceived to be able, and prepared, if necessary, to use them effectively against key elements of Soviet power."[25]

Different methods and channels are used in order to communicate to a probable opponent that the will (or readiness) to resort, under certain conditions, to the use of one's nuclear arsenal for the purpose of retaliation does indeed exist.

The most obvious and public of these is the announcement of various military and political doctrines. In the United States, examples of this are the doctrine of "massive retaliation" (1954) and the doctrine of "flexible response" that replaced it (1961), which is still in effect in one form or another to this day.

Incidentally, the demise in the concept of "massive retaliation," which implied a powerful nuclear strike against particular sites targeted by the United States, was largely connected, according to some critics of this posture, with the loss of the credibility of this threat in the eyes of the presumed enemy. It Implied that the United States was prepared to respond with the massive use of nuclear weapons to an even somewhat minor threat to its interests. When the United States had overwhelming military superiority, such intimidation could be counted on to be fruitful. However, as the U.S.-Soviet nuclear balance reached a state of equilibrium due to the successful military build-up in the Soviet Union, it became impossible to count on victory in a nuclear conflict. Critics in the United States began to say that "massive retaliation" represented either an empty declaration or an absence of policy, i.e., in the practical sense, a concession of defeat. It is difficult to make the decision to confront one's enemy if the only possible response—massive retaliation—would mean total catastrophe.

The doctrine of "flexible response," which called for a graduated response to a perceived threat (in other words, depending on the extent of the danger confronting the United States),

was called upon to confirm Washington's willingness to resort to nuclear weapons if there was no other alternative. It was presumed that pushing the nuclear button as a retaliatory response, knowing that this would not be the end of the world, would then be much easier. "Massive retaliation" was not eliminated—it became a component of "flexible response" in the event of the most extreme circumstances.

It is noteworthy that one of the arguments against the doctrine of "massive retaliation" was the idea that nuclear weapons, due to their enormous and indiscriminate destructive power, destroyed the relationship established by Carl von Clausewitz between war and politics. This argument stressed that nuclear war could not be a means of achieving rational political objectives, inasmuch as it would only lead to total destruction. The emergence of the doctrine of "flexible response," which features both options—"massive retaliation" and "limited nuclear war"—represented an attempt to reestablish and apply Clausewitz' dictum to nuclear weapons. If we are speaking about an exchange of only a limited number of nuclear strikes, then why not, in keeping with Clausewitz, consider such a war as a continuation of politics by other means? The truth, though, is that there is still the terrible danger of a "limited" nuclear war becoming an all-out nuclear war, and then the precept of the German theoretician would be destroyed along with civilization. In this case, however, another possibility could help—maintaining the stability of deterrence after the commencement of combat operations. In other words, the nuclear duel, once begun, could be "theoretically" contained.

It should be noted that the concept of MAD, which is closely tied to the massive use of nuclear weapons, excludes the concept of victory in a nuclear conflict, which cannot be said about a controlled, i.e. limited, nuclear war. Here the emphasis is placed on a variant where one opponent will back down and not want to ascend further up the ladder of escalation, and he will be the loser.

All things considered, the objective of ensuring the credibility of American deterrence is served by the appearance, from time to time, in the general and scientific press, of information about the compilation, deep inside the Pentagon, of lists of targets on Russian territory that would be subject to nuclear strikes in the event of war (the same practice existed in relation to the Soviet Union). A special agency—the Joint Strategic Target Planning Staff—is responsible for this, and its duties include developing plans for conducting nuclear war in accordance with the political directives issued by the secretary of defense and the Joint Chiefs of Staff. This practice is in complete accord with the philosophical premise of Herman Kahn in his groundbreaking work *On Thermonuclear War*: "Usually the most convincing way to look willing is to be willing."[26] One question remains, however: is there a fundamental difference between a procedure for selecting targets for the requirements of deterrence and using the same procedure to prepare for actual military operations? This provides reason for certain Russian authors to accuse the Pentagon of a lack of sincerity.

Thus, if you want nuclear peace—prepare for war. And proclaim it loudly. Otherwise, nuclear deterrence loses its force and becomes feeble and ineffectual.

At times, deterrence requires noisy and threatening propaganda.

There was speculation about the possibility of using American nuclear weapons in Korea and Indochina. During the 1973 war in the Middle East, there were announcements in Washington that nuclear forces had been placed on combat alert. In the spring of 1999, events associated with the start of the NATO bombing of Yugoslavia awakened public nuclear activism in Russia. State-run television ran a broadcast segment in which the then-chairman of the State Duma, Gennady Seleznev, held a direct phone conversation with the commander of a missile base outside of Moscow, during which they discussed the status of targeting U.S. facilities with Russian missiles. This was unprecedented since, even during the darkest years of the Cold War, nothing like this would have been shown on television. A few days later, President Boris Yeltsin, then in China, unexpectedly confirmed Russia's robust nuclear capacity in the presence of television journalists.

Are not politicians taking on far too much responsibility by resorting to nuclear saber-rattling in order to convince their opponent in the international arena? It would seem that, by relying on this approach, one should not lose sight of the fact that the nuclear bomb is fundamentally different than the conventional one. The new weapon does not fit into the old political and diplo-

matic packaging. The risks are enormous. One would think that the nuclear argument is applicable only when real and basic national interests are at stake. Otherwise, everything might end in a catastrophic conflict over something trivial or in a bluff.

Nuclear deterrence generates a certain degree of stability, but, clearly, far from total stability. A number of indicators show that this stability is quite relative.

From the standpoint of its reliability, the system of deterrence has some weak points. One of them is its dependence on the functionality of its computer systems. A launch initiated by a signal from a national MEWS warning of an incoming enemy missile attack could, if it turns out to be a false alarm, be the first act of war. One is converted unwittingly from a defender into an aggressor. Furthermore, there will be virtually no one around to analyze the outcome of the conflict. And does is really make a big difference what the cause of the nuclear exchange was: a flock of wild geese that the electronic warning system mistook for an enemy missile salvo, or an actual nuclear attack, against which it would be impossible not to retaliate. The result is the same—nuclear desert, with its last flames flickering from beneath toxic ash and ruins.

In an article on the workings of nuclear deterrence written in the mid-1980s, the U.S. observer Norman Cousins, attempting to make sense of these issues, noted that, during the period from 1981 to 1985, the screens of U.S. military computers displayed warnings of a possible missile attack against the United States more than 100 times. Fortunately, there was enough time to determine that these were false alarms. Cousins writes:

"Since there is no reason to believe that Soviet computer technology is superior, it becomes necessary to recognize that erroneous blips have turned up on Soviet computer screens. But America's very success in placing missile launching platforms close to Soviet borders has reduced the time available for Soviet experts to check for possible computer errors. For example, American Pershing-2 missiles are less than ten minutes away from major Soviet targets. Since that may not provide enough time to rule out the possibility of computer error, Soviet decision-makers may have to bet the life of their nation on guesswork. That puts not just Soviet and American citizens but all the world in jeopardy because of computer error or malfunction. The presence of Soviet submarines with missile launchers not far off America's coasts has a similar effect on American defense strategy."

In Cousins' opinion, it is far from clear how it would be possible to differentiate a real attack from an act of provocation undertaken by a third party, for example, from a submarine for the purpose of starting a nuclear war between the Soviet Union and the United States:

"A third party that thinks it is in a position to profit from a war between two other nations could conceivably launch its missile at one or the other, thus setting off a nuclear chain reaction. Theoretically, the U.S.-Soviet hot line is designed to guard against such a possibility. But there is an absurdity in the theory. The United States has spent hundreds of billions of dollars to defend against the possibility of a surprise attack; the underlying assumption is that a surprise attack is not just a realistic possibility but the most likely one in the event that an enemy should decide on war. One can readily imagine the 'Alice in Wonderland' quality of a telephone call made in expectation of learning the truth if, indeed, the receiving party actually launched the attack."

Cousins also warned about the dangers of sabotage:

"Elaborate precautions have been built into the system to protect against irresponsible individual pre-emption of decision-making. Each member of the four-man team attached to a silo has a quarter of the key required to activate the missile. Even if one man should go berserk and try to dispatch a missile, the other three would stand in the way. Unfortunately, the system is not foolproof. It does not protect against the possibility of a conspiracy among all four members, or of one or more members overwhelming the others."

Cousins reaches the conclusion that

"Most likely, however, a nuclear war would erupt without anyone having a clear idea of what went wrong. Human scientific genius has created the ultimate irrational situation in which the conditions of life could be shattered beyond recognition or repair, with the survivors, such as they are, left to guess how it all started."[27]

This is similar to a maxim that appeared in Hugo Grotius' epochal work:

"Of the two, who took up arms with righteousness is unknown."[28]

The extremely limited time available for a rational and fully justified decision in a crisis situation is shown by an analysis of the concept of nuclear deterrence undertaken by Alexei Arbatov on the pages of the Russian press:

"...The leadership will act based on the reports of subordinates and their assessment of the situation, the re-evaluation of which, or the abandonment of previously developed operational plans, would be possible only by taking the chance that a retaliatory attack would not take place at all. Essentially, the role of the leadership is reduced to a formality, to the reaction of a trained monkey that pulls a lever to get a banana when it sees a light go on.[29]

The risks inherent in deterrence rapidly increase when, instead of a bi-polar nuclear confrontation in the global arena, there emerges a nuclear multi-polarity despite the principles of non-proliferation. It would be ill-advised to rely on the technical imperfections of the bombs and missiles possessed by the newest members of the nuclear club. The growing arsenals of India and Pakistan are stark evidence of this.

This means that the peacemaking potential of nuclear weapons is hardly without reproach. Nuclear weapons in and of themselves are double-edged and fraught with global catastrophe. Hope should be placed on sober thinking, good will, and the psychological stability of politicians and their closest aides, who have control over offensive nuclear arsenals. This is, of course, impossible to pull off without the appropriate technology, despite all its flaws.

ON NUCLEAR "DELUSION"

The Cuban Missile Crisis and having to deal with its aftermath was a harsh lesson for politicians, but the Cold War was not ended by this burst of nuclear danger. The arms race continued.

Nevertheless, a breach emerged in the edifice of the Cold War—the opposing sides, in their efforts to preserve national security and strengthen international stability, began to search for ways to reach agreements designed to reduce military rivalry. As a result of these initiatives, the Limited Test-Ban Treaty (in the atmosphere, outer space, and under water) was signed in 1963. A major breakthrough was the signing of the Nuclear Non-Proliferation Treaty (NPT) in 1968.

The U.S.-Soviet negotiations on strategic weapons—both offensive and defensive—that were begun in November of 1969 constituted a new page in the effort to place real limits on nuclear arsenals. Within the framework of these negotiations, the following agreements were prepared and signed during the Soviet-American summit in Moscow: the Anti-Ballistic Missile Treaty, which was of unlimited duration, and the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms. Then came another step forward. In 1979, at the summit in Vienna, Leonid Brezhnev and President Jimmy Carter signed the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Strategic Offensive Arms (SALT-II). This historic achievement was accompanied by a reduction in international tensions, which came to be called the policy of detente.

However, in the late 1970s and early 1980s, all of this seemed to start unraveling, beginning with the prolonged Soviet occupation of Afghanistan. In 1980, the Democratic administration of President Jimmy Carter approved Directive PD-59, which called for ensuring an adequate nuclear response along the entire spectrum of possible Soviet aggression. Various options for waging war against the Soviet Union using nuclear weapons were publicly discussed in the United States. A massive nuclear strike was not ruled out. In the spring of 1983, with the Republicans already in power, President Ronald Reagan announced a program for developing an extensive anti-ballistic missile defense system known as the Strategic Defense Initiative (SDI).

In late August-early September 1983, a war of words broke out over the downing by Soviet air defenses of a South Korean airliner that had strayed into Soviet airspace in the Far East. In November of that same year, the United States began to deploy its medium range missiles in Europe within a 10-minute flight time to Moscow. The Soviet Union announced countermeasures and the suspension of its participation in the Geneva talks with the United States on nuclear-related matters. An oppressive atmosphere of war hung over the world.

During this period of a renewed militaristic outlook in Washington, the voice of the old man of American political science—George Kennan—rang out loud and clear. He condemned the escalation of nuclear hysteria. In the second edition of his book *The Nuclear Delusion: Soviet-*

American Relations in the Atomic Age, which came out in 1984 and which included his public appearances from 1950 on, Kennan says that, as early as 1946-1947, when he was a top official at the American National War College, he began to find himself "instinctively rejecting the suggestion that the nuclear weapon should ever again play a serious part in American strategy." The use of the atomic bomb against Japan was viewed by Kennan as "a regrettable extremism."[30]

In 1949, immediately after the first test explosion of an atom bomb in the Soviet Union, the issue of developing the hydrogen bomb was raised in the United States. In January 1950, at the end of his three-year service with the State Department's Policy Planning Staff, Kennan sent a memo to the attention of Secretary of State Dean Acheson. In this memo, which he considered the most important of his career, Kennan came out with a recommendation to renounce the first use of nuclear weapons, reach agreement with other nations to ban their use, and investigate the possibility of establishing international control over them.

By all accounts, Acheson did not circulate this document. The subsequent decision by the U.S. administration to begin developing the hydrogen bomb compelled Kennan to quit government service, but not for good, as would become clear.

With his unique polemical temperament, Kennan drew attention to the negative aspects of American political life at the juncture of the Carter and Reagan administrations. Kennan especially objected to the deliberate search for an external enemy and the increased use of chauvinistic language. These tendencies, in the opinion of the American historian and thinker, were fraught with false judgments, which, in turn, could lead to dangerous behavior. Kennan writes:

"Observing then, in the years of the late 1970s and early 1980s, the seemingly inexorable advance of this hysteria of professed fear of and hostility to the Soviet Union, but finding so little objective reason for it, I could only suspect that its origins were primarily subjective; and this seemed to me to suggest something much more sinister than mere intellectual error: namely, a subconscious need on the part of a great many people for an external enemy—an enemy against whom frustrations could be vented, an enemy who could serve as a convenient target for the externalization of the evil, an enemy in whose allegedly inhuman wickedness one could see the reflection of one's own exceptional virtue. Perhaps all this was not unnatural in the light of the frustrations and failures American society had been suffering at that time: such things as Vietnam; the inexplicable student rebellion; the hostage crisis; inflation; growing and uncontrolled crime and pervasive corruption and cynicism of every sort in our own country; a feeling that the development of our society was out of control. But such states of mind, more often subconscious than consciously experienced, were powerful and insidious ones. They offered great temptations to the politician anxious to avoid involvement with the bitter internal issues of the day and eager to reap, instead, the easy acclamations usually produced in our society by a vigorous ringing of the chauvinist bell. And the moods that they produced—the sweeping militarization of the American view of East-West differences; the assumption of deadly and irreconcilable conflict; the acceptance of the likelihood, if not the inevitability, of a Soviet-American war; the contemptuous neglect of the more favorable possibilities—these, and the official behavior that flowed from them in the halls of government, seemed to me to represent a situation of immense, immediate, and—what was most tragic—quite unnecessary danger."[31]

In Kennan's judgment, the main threat, which was unprecedented in its scale, was hidden in the continuation of an uncontrolled nuclear arms race. Nothing good could come of the atmosphere of mutual accusation and suspicion that existed in relations between the Soviet Union and the United States. In these circumstances, Kennan admonished, "anything could happen."[32] In May 1981, during a speech given upon receiving the Albert Einstein Peace Prize, Kennan emphasized:

"Adequate words are lacking to express the full seriousness of our present situation. It is not just we are for the moment on a collision course politically with the Soviet Union, and that the process of rational communication between the two governments seems to have broken down completely; it is also—and even more importantly—the fact that the ultimate sanction behind the conflicting policies of these two governments is a type and volume of weaponry which could not possibly be used without utter disaster for us all."[33]

"To my mind," said Kennan, "the nuclear bomb is the most useless weapon ever invented."[34] It is necessary to drastically reduce the stockpiles of this weapon; according to Kennan's calculations, 20 percent of the existing nuclear arsenals would be sufficient for deterrent needs. As a first step, it would be possible to proceed with an immediate 50-percent reduction in all types of nuclear arms, including delivery systems, while monitoring through national technical means.

In 1981, Kennan reaffirmed his appeal to government officials in Washington to renounce the first use of nuclear weapons out of a sense of simple foreboding—any deployment of nuclear weapons on the battlefield would be fraught with the danger of escalation.[35]

Kennan's opposition to nuclear weapons was imbued with a distinctive moral and ethical tone:

"For this entire preoccupation with nuclear war is a form of illness. It is morbid in the extreme. There is no hope in it—only horror. It can be understood only as some form of subconscious despair on the part of its devotees—some sort of death wish, a readiness to commit suicide for fear of death—a state of mind explicable only by some inability to face the normal hazards and vicissitudes of the human predicament—a lack of faith, or better a lack of the very strength that it takes to have faith, as countless of our generations have had it before us.

I decline to believe that this is the condition of the majority of our people. Surely there is among us, at least among majority of us, a sufficient health of the spirit, a sufficient affirmation of life, with all its joys and excitements and all its hazards and uncertainties, to permit us to slough off this morbid preoccupation, to see it and discard it as the illness it is, to turn our attention to the real challenges and possibilities that loom beyond it, and in this way to restore to ourselves our confidence in ourselves and our hope for the future of the civilization to which we all belong."[36]

Such was Kennan's reaction to the widely publicized discussions in the United States—in Congress and on television—about the adoption during the last months of the Carter administration of the doctrine of "countervailing strategy," which represented yet another modernization of the doctrine of "flexible response." It should be said that sometimes the high-level participants of those debates could not help but admit that the strategic logic was leading them into territory that was far removed from common sense. An example of this would be an excerpt from the hearings on the question of the "doctrine of countervailing strategy" held by the Senate Foreign Relations Committee on October 16, 1980:

"Secretary Brown. I am saying we keep all the options open and they [the Russians - *author*] should not think that we would give no response, because we have no credible response.

Senator Glenn. I get lost in what is credible and not credible. This whole thing gets so incredible when you consider wiping out whole nations, it is difficult to establish credibility.

Secretary Brown. That is why we sound a little crazy when we talk about it.

Senator Glenn. That is the best statement all the day."[37]

Evidently, wandering about in the maze of nuclear-political philosophy willy-nilly forces one, to quote Herman Kahn, "to think about the unthinkable." Moreover, the Christian conscience, Kennan emphasized, recoils at the thought that nuclear weapons would condemn massive numbers of peaceful citizens, in no way connected to the combatants, to death and suffering. Even worse, Kennan continued, nuclear strategists consider it completely acceptable to use innocent people as hostages to be sacrificed, if needed, as punishment for certain unacceptable actions of their governments.[38]

According to Kennan, the main sin of nuclear weapons is that their widespread use would inflict irreparable damage on mankind:

"Even trifling with the nuclear weapon, as we are now doing, we are placing at risk the entire civilization of which we are a part."[39] "Who are we then", inquires Kennan, "to place under the threat of destruction the entire environmental framework in which, according to God's will, human life should proceed? Is it not a direct violation of the Biblical injunction to honor one's parents and forebears to be ready to place at risk the achievements of the cultural past, which would inevitably perish in the flames of a nuclear war?"[40]

Kennan reaches the conclusion that:

"...*the readiness to use nuclear weapons against other human beings*—against people whom we do not know, whom we have never seen, and whose guilt or innocence it is not for us to establish—and, in doing so, to place in jeopardy the natural structure upon which all civilization rests, as though the safety and the perceived interests of our own generation were more important than everything that has ever taken place or could take place in civilization: *this is nothing less than a presumption, a blasphemy, an indignity—an indignity of monstrous dimensions—offered to God*!" [emphasis added by the author.][41]

NUCLEAR WEAPONS AND SAINT SERAPHIM

The nuclear problem is our Cold War legacy. The sharp ideological and political confrontation of that era, it would seem, has receded into the past, but the nuclear topic is far from being a dead political issue.

In 2003, the nuclear weapons problem revealed itself in an unlikely way during the commemoration of the 100th anniversary of the canonization of Saint Seraphim of Sarov by the Russian Orthodox Church. What at first glance would seem to be an exclusively internal Church event has been used to promote a contemporary Russian socio-political agenda.

Prokhor Isidorovich Moshnin—the Seraphim of Sarov—was born in 1754 and died in 1833. He was canonized in 1903. A half-century later, in 1953, the Soviet Union tested the world's first hydrogen bomb, which was developed in the closed city of Arzamas-16 (now once again known as Sarov). The nuclear center is sited where the monastery at which St. Seraphim lived his monastic life once stood. Though, at the time the bomb was tested, there was no celebration of the 50th anniversary of the saint's canonization—neither in the church nor among the atomic scientists.

Today, the coincidence of these commemorative dates and the location they are associated with—the centenary of the canonization of the saint and the 50-year anniversary of the invention of the hydrogen bomb—has supplied a pretext for attempts to mystically combine religious fervor with the work done to develop weapons of mass destruction. One Russian newspaper, in its chronicling of the celebrations that were held in Sarov (Arzamas-16) in August 2003 on the occasion of the 100-year anniversary of the canonization of Seraphim of Sarov, wrote: "If Saint Seraphim had not permitted the creation of the nuclear bomb here, it never would have happened."[42] In other words, it would not have been possible without the blessing of Seraphim, even though he himself never said anything of the kind.

The history of the life of St. Seraphim is witness that he was far removed from military matters—even the Napoleonic invasion of Russia that occurred during his lifetime was unable to interrupt his many years of seclusion at the monastery. Seraphim was much more devoted to saving souls, and became renowned for his miraculous acts. According to the Orthodox encyclopedia's accounts of the main events in Seraphim of Sarov's religious life:

"Saint Seraphim of Sarov teaches: 'Sow it in the good soil, sow it in the sand, sow it on the rock: somewhere a seed may germinate and grow in glory to God.' Even a humble sowing of good, with the mercy of the Lord, can grow and bear fruit for those dearest to us and for others and for our own souls."[43]

The monastic life of Seraphim of Sarov is a religious epic in devotion to helping the poor and the suffering.[44]

The radicalism of the Russian revolutionary era completely disrupted the veneration of the newly canonized St. Seraphim. The Bolsheviks, in thought and deed, adhered to the doctrine of militant atheism. Lenin's slogan *proclaiming active struggle against priesthood* did not bypass the Sarov compound, which was closed down in 1919. At the beginning of the 1920s, the relics of Seraphim were removed from the cathedral built by Emperor Nicholas II and disappeared from Orthodox religious life for many long decades.

Then came a time when the new authorities persecuted believers and clergy. They tore crosses out of churches, threw down church bells, and burned ancient icons that had been prayed to for centuries. Many priests were swept up by the iron broom of repression.

In order to beat religious spirituality out of people and further humiliate the church, the state pursued a policy of converting churches into storage facilities, cattle barns, community centers, workshops, and even prisons. A munitions factory was located on the grounds of the Sarov monastery up until the Nuclear Center was founded.

The Sarov compound was attractive to the founders of the Nuclear Center primarily because it was easy to establish an isolated and tightly guarded zone there. Part of the laboratory was housed in the monastery's buildings.

One should not presume that the Nuclear Center could somehow have guaranteed that the old structures would be preserved and maintained. The destruction of monasteries and churches was an integral part of a deliberately aggressive policy on the part of bolshevism. Demolition of the Sarov monastery began as early as the 1930s, the same time when Christ the Savior Church was torn down in Moscow.

The first Soviet atom bomb, born at the Nuclear Center, was tested at the Semipalatinsk Test Site on August 21, 1949. There is no evidence to show that any of the scientists working on the project were thinking at that time about Seraphim of Sarov or anything holy. The opposite is much more likely. In the early 1950s, the main cathedrals of the Sarov complex were destroyed. The convenient pretext was that the buildings were old and run-down. The demolition, however, took a long time—the walls turned out to be so strong that they had to be dynamited several times.

At the end of the 1950s, after Stalin's death and at a time when it was Khrushchev's turn to fight the Church, an order was received to demolish the still-existing bell tower, since it was giving away the facility's location. The Center's top officials managed to dissuade Moscow from doing this. Incidentally, until very recently, a television antenna that served the city took the place of the bell tower's cross. When during the summer of 2003, in conjunction with the 100-year anniversary of the canonization of St. Seraphim, the antenna was replaced with an Orthodox cross, the residents of the city had to go temporarily without television. This upset many people. As for the Church of Seraphim of Sarov, before it was recently renovated, it housed a theater of the arts; the altar had been destroyed.

Dare I say that the spirit of St. Seraphim, more than likely, would have had little to say about the development within the walls of the former Sarov compound of atomic and hydrogen bombs. Seraphim was a deeply peaceful holy man, and he never encroached upon the territory of the glorious patrons of Russian arms, Sergey Radonezhsky and Alexander Nevsky. As for the monastic life of St. Seraphim, it would seem that he would not have been able to either forbid or inspire the creation of the nuclear bomb. The political circumstances of the mid-20th century were hidden from him by a thick veil of time. Attempts to ascribe to St. Seraphim patronage of the atom bomb are tantamount to an attempt to change the past, which, to the best of our knowledge, even God cannot do.

The intellectual and spiritual bridges with which some apologists try to connect Seraphim of Sarov with the atomic and hydrogen bombs are unconvincing. They essentially rely on a quote not from St. Seraphim himself, but from an acathistus written 70 years after his death on the occasion of his canonization in 1903. "Rejoice, shield and protector of our Fatherland." Meanwhile, it is no secret that neither by the sword nor by the bomb did the humble Seraphim protect the Russian land, but rather by his faith and Christian preaching, which called people to moral purification.

Arbitrary allusions ranging from a *tsar-bomba* museum artifact to a reliquary with the newly obtained relics of Seraphim of Sarov look like artificial ideological inventions that add neither holiness to the sainted miracle-worker and healer nor technical perfection to the Soviet bomb. It would seem that one cannot insert Orthodox tradition into the nuclear bomb without violating Christian morality and without unwittingly becoming like fundamentalist extremists who called in their own time to the creation of, for instance, an "Islamic" atom bomb. It would seem that any attempt to attach to the atom bomb a label, be it of Islamic, Confucian, Anglican, Buddhist, Catholic, or Orthodox origin, could only add an additional dimension to the historic dispute among the various religious faiths. Is it worth sowing the seeds of dissension and rupturing the world along the lines of one civilization or another? It would be a step backward towards the era of religious wars.

Reconciling the very humble Seraphim with the nuclear bomb is an unnatural image. It would hardly be possible for most people, whether believers or non-believers, to ask for physical or spiritual healing from a patron of the 50-megaton *kuzkina mat*, after the explosion of which the islands of Novaya Zemlya, it is rumored, shifted their geographical coordinates, and herds of deer, blinded by the unprecedented flash in the sky, wandered for some time afterward around the tundra.

What is worthy of admiration in the history of the epic Christian life of *starets* Seraphim is that the memory of the miracle worker could not be erased, despite all the ravages that have befall-

en the Sarov monastery. The life of St. Seraphim cannot be linked to the atom bomb. Something is not right here.

After the closed zone was established around the KB-11 design bureau in 1946-47, the city of Sarov began to be referred to by the following code names: Moscow, Center 300, Kremlev, Privolzhskaya kontora, and Arzamas-16. Its historical name was restored in 1995. Earlier, in 1991, the newly acquired relics of Seraphim of Sarov were transferred to the convent in Diveyevo.

Although, for security reasons, Sarov still has a pass system in effect all around its perimeter, the restoration of sacred Orthodox objects and places associated with the name of St. Seraphim can be regarded, with complete justification, as redemption for the debasement suffered by the Orthodox faith and church at the hands of bolshevism. It seems that a time will come, and ways and means will be found to completely restore the Sarov monastery as a place of pilgrimage for anyone who so desires, and not just certain individuals.

One should not, though, ignore history and undertake the "nuclear privatization" of St. Seraphim within the borders of the closed city, i.e. unite his preaching with the state matter of upgrading first the Soviet, and now the Russian nuclear arsenal. Render unto God what is God's and unto Caesar what is Caesar's.

The scientific feat of developing a Soviet nuclear bomb, thanks to which strategic parity with the United States was achieved, has in no way been forgotten. A model of the bomb is kept safely and reverently in the city's Museum of Nuclear Weapons. And that is exactly where it belongs, not in a church. The Soviet-Russian nuclear bomb does not need the blessing of the church. In a church, it seems, one is to pray not about the atom bomb, but about preserving and strengthening peace on earth.

No one should be deluded by the coincidence of location. That St. Seraphim and KB-11 carried out their work on the territory of the Sarov monastery is a noteworthy historical fact occasioned by fate and, to a certain degree, the deliberate anti-religious policies of the state. There is no other way to understand this situation. Indeed, if you rely on another, mystical point of view, it is possible to imagine, for instance, that there is a connection between the holiness of the Solovetsky monastery and the Gulag, which, in the 1930s, flourished on its grounds. One could also take the Andronikov monastery in Moscow. After the October 1917 revolution, one of the first Soviet concentration camps was set up there to hold alien elements. Is it possible for there to be a relationship between this and the brilliant *Holy Trinity* created by Andrei Rublev within the walls of the monastery? Probably, yes, but only as a sign that highlights the militant godlessness of the authorities that converted a sacred place into a temporary prison.

THE MORAL IMPERATIVE OF NUCLEAR WEAPONS

The nuclear thinking of mankind is constantly evolving. The atom bomb is alternately being mercilessly cursed or praised for its stabilizing characteristics. Meanwhile, it's worth noting that both the stabilizing and destabilizing effects on international politics that are derived from the nuclear weapon have a common underpinning—the weapon's ability to cause a global catastrophe of unprecedented scale. Mutual nuclear deterrence is based on the fear of such a possibility.

As noted above, the concept of MAD, which compels a potential aggressor to sit quietly, represents a pragmatic choice of the "lesser evil." No matter what is said, one should consider it a fair statement that all-out nuclear war represents an absolute evil. On the contrary, a nuclear world filled with anxiety is an absolute good. In aphoristic and paradoxical form, this was expressed by Bertrand Russell, who gave us the notion of "Better red than dead."

Do the peacekeeping and intimidating functions of nuclear arsenals therefore imply that they should be absolved of immediate condemnation as an instrument of possible global catastrophe? Hardly, since despite the sincerity in its official names and titles, the nuclear weapon in all its incarnations was and still is what it is: a means of mass destruction. The principle of limiting and reducing nuclear weapons, which entered the flesh and blood of international politics in the 1960s and 1970s, along with the principle of the nonproliferation of nuclear weapons, embody

a powerful moral and ethical imperative. To adhere to these principles from this point on means to work for the mitigation of international tensions, against military threats, and for peace and stability. On the contrary, abandoning these principles is a concession to global evil.

Steps to support nuclear deterrent forces have a positive moral and ethical meaning if they are taken within the framework of maintaining parity, i.e. in accordance with the principle of sufficiency. There is no contradiction here. This is a given in today's nuclear world.

One should always keep the moral ambiguity of the nuclear weapon in mind. It is a reliable guide that can be counted on to prevent us from falling into nuclear euphoria in hopes of political gain. This is important for both politicians and physicists to understand.

The same dilemma exists with physical sciences and the humanities. Which should be given preference? Neither of them should. Both are equally necessary. It would be impossible to do without the humanities, i.e. without morals.

The nuclear weapon is one of the harsh realities of our era. It is so harsh that contemporary Russian military doctrine rejected the unilateral renouncement by the Soviet Union of the first use of nuclear weapons. This change, one would suppose, was occasioned by the objective requirements of national security. The actual scale and nature of the threat might force one to resort to an extreme measure of restraining aggression, should it occur, by using nuclear arms on the battlefield.

Demagogic attempts to play the atomic card for "flag-waving" patriotic reasons as a "bargaining chip" in discussions about the necessity of "restoring the greatness" of Russia are objectionable. It's no secret that although the bipolarity of the Cold War era has collapsed, U.S.-Russian nuclear parity even now continues to fill its systemic role in ensuring the global balance of power. In the nuclear sense, the world is still primarily "bipolar" as opposed to multipolar and even more so to unipolar. Authoritative reports in the media about the practical steps being taken by Russian authorities to modernize and maintain the operational readiness of their ICBMs, SLBMs, long-range bombers, anti-missile systems, and air defenses show that our nuclear deterrent capability has been maintained at a sufficient level. Alarmism is harmful and out of place here. Nuclear capability must, on the one hand, provide a convincing nuclear deterrent while, on the other, not appearing confrontational, since this would damage stability.

The new dangers that have emerged in the international arena, which are primarily linked with the further spread of nuclear weapons and the more acute threat of terrorism, have marginalized the idea of nuclear disarmament as untimely and utopian. It is very seductive to accord the nuclear weapon the role of arbiter—"The Great Inquisitor"—something that is sorely needed to prevent nations from engaging in mortal combat for their own selfish interests.

Meanwhile, it would be a mistake to exaggerate the importance of the peacekeeping function of nuclear weapons in relationships among states. This approach would be tantamount to acknowledging the fatal inevitability of continuing the nuclear arms race and having these weapons continue to spread across the earth's surface. The predominance of force as a factor in politics would never end.

The doctrine of "limited nuclear war" does not provide a way out of the nuclear dead end. Proposed during the Cold War era, it induced a false sense of security in comparison with a total nuclear cataclysm. Under the influence of this military policy, the illusion of nuclear weapons suitable for achieving rational political objectives also arose. It is most fortunate that the formulations of this doctrine remained only on paper. Recently published top-secret Warsaw Pact materials show that a "limited" nuclear showdown between NATO and the Warsaw Pact would have left most of Europe in ruins. And this is without factoring in the dangers of escalation inherent in any use of nuclear weapons in an actual war.

In the face of global challenges of unprecedented scale—global warming, environmental destruction, epidemics, mass starvation, energy crises, etc.—mankind, for the sake of self-preservation, ultimately cannot avoid thinking about the necessity of making the transition to a qualitatively new type of cooperation in the global arena. Although there have been many contradictions, this transition is already occurring through globalization, meaning an increase in interdependence among states and their interests. As for the so-called "anti-globalists," who

in their idiotic rage smash storefronts and set fire to the vehicles of respectable citizens, it would seem that they sing with the alien voice of the masters of international terrorism. Confused young people make up for their unhappiness with their own social dislocation at the expense of people who have never done anything wrong to them. No doubt among these disheveled anti-globalists is a large percentage of paid provocateurs.

The stand-off along the demarcation of "socialism vs. capitalism," which polarized the world during the Cold War, no longer exists. The direct threat of a global military catastrophe has been averted. The prerequisites for harmonizing national interests, for a joint effort to combat what are probably the main plagues of the 21st century—international terrorism and the proliferation of nuclear weapons—have materialized.

Mankind's dependence on nuclear weapons to guarantee the absence of war will gradually fade into the past. Nuclear weapons will be replaced by rigorous international agreements overseen by the U.N. Security Council and stipulating strict control over the military activity of nations up to and including taking collective enforcement actions in the event of a violation of the prevailing peace.

The core of such an order would be a ban on nuclear weapons. This is not likely to happen overnight, as nations will approach nuclear disarmament in parallel with an advancing humanization of the entire system of international relations and the reinforcement of mutual trust. Within a context of confrontation, political squabbling, and active rivalry in military build-up, it would, of course, make no sense to pose a practical question about total and comprehensive disarmament. To freeze like a deer in the headlights before nuclear weapons is, however, also unacceptable and essentially immoral. The world deserves a better fate than to sit on the nuclear powder keg.

The contrariness of human nature is a serious argument in favor of nuclear disarmament. To avoid the devil's temptation, the nuclear weapon, in the final analysis, must be taken away from us.

Certainly, the intriguing issue of deadlines remains: when, exactly, will it be possible to begin the systematic destruction of the prolific nuclear genie that has long been out of the bottle?

The program proposed by Soviet president Mikhail Gorbachev in January 1986 stipulated that nuclear weapons would be destroyed by the end of the 20th century. One recalls how, at the U.S.-Soviet negotiations on nuclear and space-based weapons in Geneva, we, the Soviet diplomats, in accordance with our instructions, justified this approach in discussions with our counterparts. Our mission was made easier by the fact that we, understandably, devoted most of our attention to immediately practical problems in the area of arms limitations, reinforcing the ABM treaty, solving the problem of intermediate-range missiles, and deep cuts in strategic offensive weapons. We would, however, inevitably touch upon the theme of achieving a nuclear-free world.

In mid-1986, during an unofficial discussion, the U.S. assistant secretary of defense, Richard Perle, with whom I was privileged to prepare the draft Nuclear Risk Reduction Center Agreement, became interested in my personal views regarding how long it would take for nuclear disarmament to occur in light of the fact that nations had yet to reconcile politically. My reaction to Perle's question, which was filled with skepticism, boiled down to saying that agreements to reduce nuclear arsenals on the way to disarmament would go together with changes in the very nature of relations among states, all the while moving away from Cold War traditions.

Perle, of course, did not believe that nuclear disarmament would happen any time soon. In the best-case scenario, according to him, it would not happen before the middle of the 21st century.

At the time of our conversation, this seemed like something far over the horizon—a remote and vague future. Twenty years after our meeting, the timeline indicated by Perle has moved substantially closer in time. It's interesting what he would have said if commenting on a problem he himself had brought up.

The difficulties of moving along the path of reducing the nuclear threat are obvious, but should not be turned into dead ends. The preservation of political tension, the return to old disputes and the search for new ones, and attempts to, one way or another, reanimate Cold War mores, will not yield any dividends.

The color photographs taken by U.S. rovers of Martian deserts, where, as near as anyone can tell, oceans once existed, give one cause to think. What turned Mars into a trackless void? What caused the reversal of the magnetic field that, at one time, protected the Martian atmosphere, which has all but disappeared? The analogies with Mars serve as a warning and provide an incentive to take action.

The general director of IAEA, Doctor Mohammed ElBaradei, at a speech given upon the occasion of his receipt of the Nobel Peace Prize on December 10, 2005, emphasized:

"I have no doubt that, if we hope to escape self-destruction, then nuclear weapons should have no place in our collective conscience, and no role in our security. To that end, we must ensure—absolutely—that no more countries acquire these deadly weapons. We must see to it that nuclear-weapon states take concrete steps towards nuclear disarmament. And we must put in place a security system that does not rely on nuclear deterrence."[45]

Given that ElBaradei is Muslim, these words embody a de facto ecumenical call for nuclear disarmament.

Now that passions surrounding the U.S. withdrawal from the ABM treaty have died down, it would be possible to seriously take up the issue of the gradual renunciation of the concept of MAD by drafting broad U.S.-Russian agreements on mutual security, as opposed to mutual danger. These agreements could serve as reliable bulwarks against both nuclear terrorism and potential nuclear saboteurs.

At some point during U.S.-Soviet negotiations on limiting and reducing strategic arms, the principle of "parity and equal security" was formulated and successfully adopted. This was a time of acute political and ideological confrontation. In the new, post Cold-War era, the principle of "mutual security" would require the replacement of only one term.

Nuclear disarmament is on the agenda of the current Russian foreign policy doctrine. It seems that this component could be strengthened and made more concrete as a final objective, some type of beacon in the cause of eliminating the nuclear threat.

One should not succumb to over-optimistic dreams about a world completely free of conflict—that will obviously never come to pass. To resolve, however, emerging disputes without resorting to war or the threat of force, without brandishing, so to speak, a nuclear shin bone—it's difficult to find constructive alternatives to such a world order.

Here the main prerogatives belong to the U.N. Security Council. Under its aegis, it would be possible to establish an effective international mechanism for monitoring existing nuclear arsenals. Such a monitoring system would make it possible to eliminate the likelihood of unexpected nuclear aggression and/or to clearly identify the source of such danger. As a result, nuclear weapons, while yet on the verge of being completely banned, would be deprived of their gloomy aura as a terminator of mankind.

ON EXHIBIT

An exhibit organized in the second half of the 1950s at Moscow's Gorky Park, presumably to commemorate the 10-year anniversary of the bombing of Hiroshima and Nagasaki, comes to mind. In oversized paintings rendered in traditional Japanese style, the husband and wife team of artists—the Marukis—depicted the grief and suffering that befell the residents of these cities, incinerated by the atomic firestorm of August 1945. Here were the harrowing scenes of Dante's inferno on earth in the 20th century. A hell created by people.

Leafing through the pages of the guest book, as is my habit, I came across the following entry: "Why show this to people? This will surely happen again." One visitor did not want other visitors to be upset by the pictures of the inevitable fate of mankind.

As of now, however, it has been possible to avoid repeating the tragedy of the Japanese cities, despite the fact that many theoreticians were predicting an imminent atomic exchange. Thanks to the will of God. Thanks to adherence to the covenants of the doctrine of deterrence, which are nourished by the unquenchable instinct of self-preservation. And thanks to the tireless

work of diplomats enlisted in the cause of limiting nuclear arsenals, and also thanks to a capricious destiny that has not yet abandoned people.

There is, however, insufficient basis for unconditional optimism. Faith in the future of world civilization has to be bolstered by unflagging joint efforts directed towards the prevention and, in the final analysis, elimination of the risk of nuclear catastrophe. People will become accustomed to living in a world without the threat of mutual destruction. Only then it will be possible to manage without mutual nuclear deterrence or intimidation.

The moral ambivalence towards nuclear weapons is closely tied to their purpose—helping to preserve international stability. On the one hand, nuclear weapons hold the threat of catastrophe while, on the other, securing the balance of military power. In both cases, the goal is the same: to prevent the unleashing of aggressive fantasies. When, as a result of fundamental political changes in the international arena, nuclear weapons cease to be a factor in global parity, the dualistic formulas that must now be used when assessing nuclear weapons from a moral and ethical standpoint will be forgottenon the one hand, while, on the other... The atomic bomb will be used solely to destroy dangerous asteroids hurtling towards Earth. Instead of being the terminator of mankind, the atomic bomb will finally become its savior.

Notes

[1] Translation by Lucy Vogel, "A Symbolist's Inferno: Blok and Dante," *The Russian Review* 29 (January 1970), pp. 38-51.

[2] S. N. Bulgakov, *Sochineniya v dvukh tomakh [Collected Works in Two Volumes]* (Moscow: Nauka Publishers, 1993), Vol. 2, p. 391.

[3] *Zavtra* No. 507 (August 2003), p. 6.

[4] Niebuhr Reinhold, *The Irony of American History* (New York: Charles Scribner's Sons, 1952), pp. vii-viii.

[5] G. K. Zhukov, *Vospominaniya i razmyshleniya [Reminiscences and Reflections]* (Moscow: Novosti Publishers, 1995), p. 336.

[6] A. P. Sudoplatov, *Raznyye dni taynoy voyny i diplomatii. 1941 god [Some Days in the Secret War and Diplomacy. 1941]* (Moscow: OLMA-Press, 2001), p. 314.

[7] Milovan Djilas, *Conversations with Stalin* (Moscow: Tsentrpoligraf, 2002), p. 174.

[8] *Izvestiya*, February 28, 2004, p. 13.

[9] Felix Chuev, *Sto sorok besed s Molotovym: iz dnevnika F. Chuyeva [Molotov Remembers Conversations with Felix Chuev]* (Moscow: TERRA, 1991), p. 90.

[10] James Burnham, *The Struggle for the World* (New York: The John Day Company, Inc., 1947), pp. 244-245.

[11] Ibid., p. 182.

[12] George Kennan, *Diplomatiya vtoroy mirovoy voyny. Glazami amerikanskogo posla v SSSR Dzhordzha Kennana [translation of Memoirs: 1925-1950]* (Moscow: Tsentrpoligraf, 2002), pp. 257-258.

[13] Ibid., pp. 256-257.

[14] Ibid., pp. 259-260.

[15] Reinhold, pp. 145-146.

[16] Ibid., p. 129.

[17] Ibid., p. 134.

[18] Ibid., p. 39.

[19] Edward Teller, *Memoirs. A Twentieth-Century Journey in Science and Politics* (Cambridge, Massachusetts: Perseus Publishing, October 2001), p. 215.

[20] Ibid., p. 287.

[21] Ibid., pp. 292-293.

[22] *Izvestiya*, April 17, 1994, p. 13.

[23] Andrei Sakharov, *Vospominaniya v dvukh tomakh. Tom pervyy [Memoirs, Volume I]* (Moscow: Human Rights Publishers, 1996), pp. 270-271.

[24] Hugo Grotius, *O prave voyny i mira* [*On the Laws of War and Peace,* translation of *De jure belli ac pacis (Paris, 1625)*] (Moscow: State Publishers of Political Literature, 1956), p. 538.

[25] Report of the President's Commission on Strategic Forces, April 1983, pp. 2-3.

[26] Herman Kahn, *On Thermonuclear War* (Princeton: Princeton University Press, 1960), p. 287.

[27] Norman Cousins, "High-Tech Arms Leave Little Time to Avert Disaster," *International Herald Tribune*, February 8-9, 1986, p. 4.

[28] Grotius, *On the Laws of War and Peace*, p. 569.

[29] *Independent Military Review* 358 (December 5-18, 2003), p. 4.

[30] George F. Kennan, *The Nuclear Delusion: Soviet-American Relations in the Atomic Age* (New York: Pantheon Books, 1982), p. xiv.

[31] Ibid., pp xxii-xxiii.

[32] Ibid., xiv.

[33] Ibid., p. 175.

[34] Ibid., p. 176.

[35] Ibid., p. 195.

[36] Ibid., pp. 199-200.

[37] "Nuclear War Strategy," Hearing before the Committee on Foreign Relations, United States Senate, Ninety-Sixth Congress, Second Session on Presidential Directive 59, September 16, 1980 (Washington: US Government Printing Office, 1981), p. 22.

[38] Kennan, *The Nuclear Delusion*, pp. 102-103.

[39] Ibid., p. 204.

[40] Ibid., p. 206.

[41] Ibid., pp. 206-207.

[42] *Zavtra* 507 (August 2003), p. 6.

[43] *Pravoslavnaya entsiklopediya [Orthodox Encyclopedia]* (Moscow: Rusizdat, 1999), p. 450.

[44] Saint Seraphim spent more than 25 years (1784-1810) as a hermit in the "wilderness,", surviving an attack by robbers, during which he was badly beaten. During this time, he passed 1,000 days and 1,000 nights in prayer on a rock in a remote forest, living on grass. In 1810, Seraphim went into seclusion in a monastery. Then, in 1820, he came out of seclusion and began to receive believers, who came to him for consolation and healing. Seraphim of Sarov had a heart filled with pious love for people. He rejected black clothes and went around in a white cassock. He brimmed with pastoral joy and faith in the Risen Christ throughout the year. He greeted everyone with "Good day, my dear! Christ has risen!" His biographers report that, since childhood, Seraphim had enjoyed the special patronage of the Mother of God, who appeared to him on more than one occasion. Not far from the Sarov monastery—in Diveyevo—he founded and looked after a convent.

Reverence for Seraphim of Sarov began while he was still living, and after his death, people from all over the country came to his chambers. The canonization of St. Seraphim took place at the behest of archimandrite Seraphim (Chichagov), who told the story of the *starets*' life to Emperor Nicholas II. In 1903, the entire imperial family attended the canonization ceremony in Sarov. Empress Alexandra Feodorovna, who dreamed of having a son, bathed while praying in the miraculous spring of Saint Seraphim, and soon became pregnant, giving birth a year later to the heir to the throne, her son Alexei. The grateful emperor decreed that a cathedral be built in Sarov, and St. Seraphim's relics were enshrined there.

[45] *IAEA Information Bulletin*, December 10, 2005, p. 2.

Dmitri Trenin Vitali Tsygichko

WHAT IS CHINA TO RUSSIA: *COMRADE OR MASTER?*

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: More menace than challenge

Good day, Dmitri,

There is one urgent question that has descended from the realm of high theory to the sphere of practical policy. I am very worried about it, and would like to pose it as a topic for discussion with you in our electronic correspondence, although it is certainly not a new topic for you.

Here is the question: recently, observing the behavior of our southern neighbor—China—I have to conclude that it is returning to its imperial traditions ever more and acting accordingly. Today the Celestial Empire, with its powerful, dynamically developing economy as well as the most numerous army in the world, is a center of power, attempting to strengthen and enlarge its influence not only in the Asia-Pacific, but also far beyond its limits. Moreover, relying on historical tradition, the new Middle Kingdom is shunning no means to achieve its hegemonic aims and is acting more and more brazenly.

And I say without reservation: in my view, the openly hegemonic direction that Chinese foreign policy has taken poses a direct threat—or, to be more precise, an entire collection of threats and challenges—to Russian interests in the Asia-Pacific region.

What conclusions should Russia draw, and how should it correct its foreign policy?

Sincerely,

Vitali Tsygichko

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Soft power

Hello, Vitali,

Speaking of threats and challenges, it seems to me that you are describing everything in unjustifiably gloomy tones.

Yes, China is a growing center of power at the global level. In the distant future (mid-century) China may become the world's largest economy. The increase in China's economic weight will be accompanied by an increase in its political influence. China's military power—both conventional and nuclear—will continue to be improved. At the same time, China's *soft power* will continue to grow, based on its growing attractiveness and its ability to influence the desires

and behavior of other countries. Figuratively speaking, *without leaving its shores*, China will gradually *twist* its surrounding *space*, forcing other countries and peoples to orient themselves toward the Middle Kingdom.

But China is not going to be like the Soviet Union or Japan of the 1930s. Its expansion will not be predominantly territorial in nature, and basically will not be achieved by military means. The Chinese *divisions* will be transnational corporations with their headquarters in Shanghai, Beijing, Shenzhen, and so forth. PRC military aggression against Russia is extremely improbable in the foreseeable future (let us say, 15-20 years). "Shunning no means" and "acting brazenly" cannot be said about 21st century China, which, on the contrary, is acting scrupulously and prudently.

Yours,

Dmitri Trenin

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Military games

Dmitri,

I cannot agree with your idea that China's "expansion will not be predominantly territorial in nature, and basically will not be achieved by military means."

That China is acting scrupulously and prudently is true. It is for this very reason that it is important for us to understand why, in September 2006, it conducted a 10-day Chinese People's Liberation Army (PLA) exercise that was unprecedented in scale, involving the Shenyang and Beijing military districts, the two most powerful of the seven Chinese districts. These are the very regions that border on Russia: Shenyang abuts the Russian Armed Forces' Far Eastern district, and Beijing the Siberian military district. During the exercises, Shenyang units advanced 1,000 km into the Beijing district, where they combated units from the latter. As is clear to any military expert, the exercises were practicing the conduct of an offensive operation against Russia and Kazakhstan. In practice, a troop exercise of such great scale is generally conducted to check strategic concepts that have already been developed as well as operational plans that have been adopted by the military.

But these exercises were undertaken during a period when our political and economic ties were at their highest point! Such a frank show of force should have clearly said to our country's leaders that China is ready to unleash a war against Russia if its policies do not meet Chinese interests. It is strange that neither the political nor the military leadership of our country reacted in any way to this military demarche.

Vitali Tsygichko

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Look inside

Vitali,

I am confident that the Russian military is attentively studying the scenarios of the Chinese exercises. I do not believe that your conclusion about the aims of the exercises that were carried out is substantiated. It would seem that you yourself are puzzled by your conclusion, since you immediately write that the exercises were conducted during a time, "when our political and economic ties were at their highest point." If your conclusion is valid, then one of the following two things is true: either Beijing, acting so illogically, simply undermined its own long-term strategy, or the PLA leadership acted independently of the leadership of the PRC. Otherwise, your conclusion is not valid, and a more in-depth analysis is necessary.

However, if we develop your thought about the Chinese threat, then we should concentrate on the development of Russia itself or, more precisely, of our eastern territories. The development of the Far Eastern and Eastern Siberian districts and their dual integration—into Russia as well as the Asia Pacific region—is one of the most important geopolitical problems facing Russia today. The solution to this problem, however, depends on Russians themselves—the political leaders, businessmen, federal and regional elites, as well as, in the end, the public. If Russia *loses* the Far East and Siberia (and China *takes* them), it will happen not because of Chinese expansion, but because of Russia's inability to develop. I hope that this it will not occur. Russia has an officially acknowledged and completely agreed-upon border with China. The Russians themselves, and no one else, answer for what happens inside these borders. Russia's "Chinese problem" is located inside them.

Yours,

DT

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Check the textbooks

You see, Dmitri, if it is impossible to change the current negative trends of social and economic development in the Russian Far East, then as a result of Chinese demographic and economic expansion this territory may become its protectorate. Under certain circumstances we cannot exclude the possible annexation of a number of regions in the Russian Far East, possibly with the aid of military force, since official Beijing considers these territories to be temporarily "alienated" and historically belonging to it. You can even judge these Chinese territorial claims by looking at *school geography textbooks, where a number of Russian Far Eastern regions are included within the country's borders.*

A key concept that Chinese theorists use to understand the development of the world today is the idea of "survival space," which, in my opinion, is used to ensure security and the state's vital activities, as well as its scientific, technical, and economic development. The so-called "strategic boundaries" of this space are the territorial and spatial borders within which the state, with the aid of the military, is realistically capable of protecting its interests.

The "survival space" includes all spheres of the state's vital activities, on land, at sea, under water, in the air, and in space. The dimensions of "survival space" are determined by a country's economic, scientific, technical, social, and military capabilities (the "total power" of the state). According to Chinese theorists, the strategic boundaries of the "survival space" of strong powers extend far beyond their state borders, while the "survival space" of many *weak* countries has strategic boundaries that do not always correspond to the "total power" of these states, which can sometimes lead to *weak* countries losing some of their territory. In their opinion, a majority of countries today are striving to establish new strategic boundaries for their "survival space" that correspond to the state's real power. Hence, it follows that China must enlarge its "survival space" in accordance with its growing economic and military power at the expense of weaker neighbors, including Russia.

This theory, which justifies using force to solve international problems, became the basis for Chinese foreign policy long ago and has been completely confirmed by recent events. China has territorial claims against 11 of its 24 neighbors, including India, Japan, Vietnam, the Philippines, and Russia, and is trying to annex territories that it considers disputed, including by force.

Military force was and remains the most important political factor, and, as recent history shows, China is actively making use of this factor in its relations with all of its neighbors.

Now I'd like to go back to my previous e-mail about the PLA exercises. In China these sorts of events can only happen through a decision of the country's highest leadership, which completely governs the military and sets military policy and military strategy. Therefore I cannot agree with you regarding political and military analyses of the strategic exercises undertaken by the Chinese army.

Any military expert knows that exercises on this scale are undertaken at the final stage of a multi-year program to train troops to enact strategic and operational plans in the military theater of operations. The geography of these exercises and the offensive nature of the tasks undertaken leave no doubts that Russia played the role of the "potential adversary."

A show of force is an ancient, traditional Chinese political method. It is clear that the exercises were a well thought out, and primarily political action, giving us to understand what "potential adversary" Russia will have to deal with, what the strategic plans of this adversary will be if relations turn sour, and how it should treat China.

To conclude, I have to say that the Sino-Russian border agreement in no way guarantees our security in the Far East. Chinese political practice indicates that it will easily violate any agreement that does not suit it for one reason or another. In the second place, the border agreement is strictly classified and it is not known to the general public. Meanwhile, a number of serious American publications asserts that this agreement was concluded for a period of just 20 years, after which time the parties must return to negotiations on this question. The fact that the text of the agreement has been held secret speaks in favor of this assertion.

Vitali T.

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Thorough research

Vitali,

The formulation of Chinese foreign policy is a far more complex and contradictory process. You give your reading of the concepts proposed by Chinese theorists. Maybe it is close to the truth, but whether it is or not can only be established after serious analysis and comparison of these texts with real life. Furthermore, one must take into account the fact that the policies of any modern state are not simply based on theoretical constructs. *From without* any policy will appear more logical and more complete—and sometimes more ominous—than it really is. On the contrary, one's own policy seems less focused, more eclectic, and frequently weaker than it appears from outside.

As far as the secret agreement is concerned, it is very hard for me to imagine a Russian president who would conclude a clearly unfavorable, secret *agreement that is also only valid for 20 years*. *In principle, when the moment of truth comes* it should still be welcomed. It is hard to imagine what could induce the head of the Russian state to agree to such a massive surrender of fundamental national interests. Moreover, from your reasoning it follows logically that there is no special need for such complex and secret constructions: "the Chinese easily violate any agreement."

I object to automatically interpreting the vagueness that exists as evidence of the existence of a Chinese threat. China is a topic that is too serious for Russia for it to be discussed in a wholly complimentary spirit or, on the contrary, with a predetermined *incriminatory bias*. But it absolutely must be discussed—on this, I think, we are in agreement. In my opinion, China should neither be thoughtlessly admired because of its new power nor instinctively feared. It requires attentive and thorough study. Otherwise errors are inevitable.

DT

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Russia is being used

OK, then let's examine this question attentively and thoroughly.

Russia has an important place in the Chinese geopolitical game, and Beijing is doing everything possible to ensure that our country remains in its sphere of influence. First of all, Russia is extremely important for China as an economic partner: as a supplier of the energy resources

needed to continue the country's economic modernization, and as a supplier of modern weaponry for its army. Therefore, the Chinese will do everything possible to strengthen their economic and political position in our country. The enormous activity of the Chinese lobby in Russia, which is operating successfully at all levels of government, testifies to this.

Sino-Russian cooperation today is developing rapidly in the economic, political, military, and other spheres. It goes without saying that the development of good-neighbor, mutually advantageous relations between our countries can only be welcomed. However, the current trend and the content of these relations must be based not on the immediate political situation, as it is now, but on a clear understanding of our long-term national interests and a sober analysis of the far-reaching aims of current Chinese policy, taking into account its geopolitical ambitions, for which it is actively using Russia.

Vitali

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Re: Russia is being used

I support the call to recognize Russia's long-term interests and the formation of policy on this basis, not on the basis of the immediate political situation. At the same time, foreign policy everywhere has always reflected the concrete interests of ruling elites (with corrections to make them democratically legitimate—where democracy exists), their world view and prejudices. Russian foreign policy is determined and will be determined by concrete—and partially competing—interest groups with various ideologies and prejudices. The rapprochement with China has a material basis, which cannot be ignored.

For China, Russia is a strategic rear and an enormous resource base. It is natural that China try to keep Russia in its field of "amicable gravitational pull" and to increase its access to various Russian resources—from natural resources (energy and ecological) to technological resources (weapons and space). Chinese influence on Russian decisionmaking, first and foremost on questions related to cooperation with the PRC, exists, but there is no "Chinese lobby in Russia, which is operating successfully at all levels of government," although, of course, over time it could arise.

Yours,

DT

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: What about Russia's interests?

I am also greatly worried by the clearly observable Chinese influence over our foreign policy of late, which is pushing an anti-American and anti-Western bent. This is clearly against basic Russian national interests.

China, in trying to turn our country into its "strategic rear and resource base," will never be interested in our economic and political development. Therefore, the present eastern focus of our policy helps, using your terminology, to "twist space" in the interest of China, but not in the basic interest of our country.

I would also like to mention the important tool of Chinese regional policy that is the Shanghai Cooperation Organization (SCO). China needs this organization, first of all, to strengthen its influence in the region and its control over the region's natural resources. As the strongest regional power, China would like to predominate in this organization and use it in its own interests to the maximum extent possible (which the Chinese proposal to completely fund all SCO energy projects alone indicates. In addition, this organization helps to ensure freer access of Chinese goods to the markets of SCO countries). It does not have to worry about its own market, as it has no competitors. Only Russia is a serious competitor to China within the SCO

framework, as the former is seriously trying to prevent the attempt of the latter to dominate the organization.

No one threatens China's land borders. China can solve its domestic problems, such as separatism, by itself. In other words, the country is self-sufficient militarily, and only needs military cooperation under the SCO framework in order to free its hands if any conflict should arise that affects its interests in the region.

In the near future these circumstances may already be the source of serious conflicts, given the clear differences in the economic and political interests of Russia and China. The current problems between the region's countries over energy supplies disagreements within the SCO, and many other problems are obviously only the beginning of growing contradictions. It is clear that the Chinese understand this well and are prepared for a similar turn of events, in the military sphere as well.

V. Tsygichko

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: Our own choice

Vitali,

The evolution of Russian foreign policy is a separate topic of conversation. Russia's "withdrawal" from the western orbit, moderate (thus far) anti-Americanism, and political rapprochement with and even formation of a bloc together with the PRC (for example, in the U.N.), are facts that are determined by the Kremlin's new course of action in the international arena. They are, however, the result of a conscious choice made by the Russian leadership, and not the result of a "Chinese attack."

Of course, the Chinese leadership considers rapprochement between Russia and the United States to be extremely undesirable, as it would make Russia an instrument of U.S. policy with respect to China. Nor would Beijing welcome a Russian rapprochement with Japan, if it is to the detriment of Chinese interests (for example, in the area of energy security).

I agree that the SCO can primarily be viewed as "China in Central Asia." With the help of the SCO, Beijing obtained the possibility of developing relations with five former Soviet republics without irritating Moscow. Russia, for its part, obtained the option of "watching over" the development of these relations and from time to time influencing them. For China, the initiative to create the SCO was a sign of the activization of foreign policy, which until the mid-1990s had remained fairly passive. For Beijing, the creation of the SCO also meant the formation of favorable external conditions for the stabilization of the situation in Xinjiang (which was traditionally called West Turkestan), as well as access to alternative energy supplies.

The SCO is a positive addition to regional security. First, because of the fact that its informal cochairmen are the PRC and Russia; second, because its members have come to include all of the Central Asian states, with exception of Turkmenistan; third, because states like India, Pakistan, Iran, as well as Mongolia participate in SCO work as observers. There is also the SCO-Afghanistan channel. The main areas of SCO activity—security and development—logically result from the approach of obtaining security *through* development. Here Moscow and Beijing are secretly in competition within the SCO framework. Russia does not want to allow the Chinese to get into traditional security issues (*bases-alliances-exercises-weapons*), but at the same time is jealous of Beijing's attempt to transfer the center of gravity to development issues (*credit-trade-investment*). The solution may be the division of spheres of responsibility, but Moscow, apparently, considers Central Asia to be a region where Russian interests must remain predominant in all fundamental areas.

D. Trenin

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Bad model

Dmitri,

In my opinion, Beijing has a lot of different plans. Its political plan is to try not to allow a rapprochement between Russia and the United States, Japan, and other western democracies, which would be able to prevent its plans for regional hegemony. That is why it is afraid of democratization in our country and is intensively pushing its own authoritarian political model on our political elite—successfully to date, unfortunately.

There are many propagandistic Chinese slogans that have now firmly entered into the lexicon of Russian politicians. This includes the "special Russian path towards democracy," "Russian society's unpreparedness for western principles and standards of democracy," and the "vertical of power," as well as other views that justify our country's slide into bureaucratic authoritarianism.

I have already mentioned Russia's importance for China as a stable supplier of energy as well as modern weapons and technologies. This is why China is doing everything it can to draw our country into its orbit of economic and geopolitical interests, including through the declaration of the friendship between our peoples and other measures, such as declaring the "Year of Russia" in China and the "Year of China" in Russia. All of this creates a facade, behind which hide utterly pragmatic purposes that by no means coincide with our national interests, since the prospect of becoming simply a supplier of raw resources to China is the worst future we can imagine. And we are already quite familiar with the concept of "friendship between peoples" from our recent communist history and know how that ended.

If we examine the economic side of the two countries' relationship, then we must first note the practical absence of Chinese investment in our industry, agriculture, and infrastructure. They are only prepared to invest money in our energy projects. This can be explained by two basic reasons. First, they don't need any extra competitors on our domestic and foreign markets. Cheap Chinese goods have taken over our shelves. Today these are not only consumer goods, but also electronics, automobiles, machine tools, and industrial equipment, and soon they will include high-tech goods too. All of this does not help in the development of our currently very weak industrial base. Second, the Chinese would like to preserve us as their source of raw materials and get control over our energy resources, by putting money into our projects. But the intensive development of our economy would require a sharp increase in domestic energy consumption, which undoubtedly would also affect the volume of energy supplied to China. Thus, the innovative development of our economy is by no means in their interest. These circumstances form the basis for China's economic policy with respect to Russia, as is confirmed by Sino-Russian trade statistics and the content of the majority of the agreements that have been concluded.

VT

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: It depends on us

Vitali,

The Chinese leadership is concentrating on geopolitics, the global economy, and global strategy. They consider democracy as a tool through which the United States is trying to promote its own concrete interests. In this they are united with the inhabitants of the Kremlin. The Chinese are not so much afraid of Russian democracy (they are more likely skeptical about its prospects), as they are of chaos and a return to the pro-American policies of the early 1990s.

Nobody from outside is pushing the authoritarian model on the Russian leadership. The responsibility for the state of the Russian political system lies with the Russian leaders who built

this system and the large part of the Russian population who support this system. The Russian political system will unavoidably change when interest groups mature and it can no longer satisfy these interests in its present form. Neither China, on the one hand, nor the United States, on the other, have anything to do with this.

Furthermore, there are clearly visible changes in Sino-Russian relations. CCP Chairman Hu Jintao's visit to Moscow in March 2007 demonstrated that Sino-Russian relations are becoming more and more pragmatic. At present Beijing is primarily interested in getting energy from Russia, and Moscow in increasing its economic return from ties with China. In this regard, the short passage in the Foreign Ministry's Survey of Russian Federation Foreign Policy dedicated to relations with the PRC is indicative: "the partnership between the two countries is not so much *strategic*, as *pragmatic*."

The development of Sino-Russian economic relations faces a number of problems. For instance, the price that the Chinese are willing to pay for Russian gas is several times lower than the price of gas on Gazprom's western European markets. The Chinese, for their part, are not satisfied with the quality of the Russian industrial products (commercial airplanes), which they have purchased. Russians sometimes hope for political deals (as they say, "in the name of improved relations"), an area in which the Chinese are particularly pragmatic. Russians will have to learn how to compete on the Chinese market, to look for niches where they can push their goods and services. Without this Russia will end up supplying energy and raw materials to China, as well as weapons and military technologies.

As for sober analysis, China will probably continue its upward trajectory and the space around it will continue to be twisted. Losing out to China in the area of development, Russia will likely "fall" in the direction of its eastern neighbor. It can be saved through accelerated self-development. Whether this project succeeds or not depends on Russians. We should not fear China, but the inability to retransform Russian society, the economy, and the political system into a viable and effective organism.

D. Trenin

From: Vitali Tsygichko
To: Dmitri Trenin
Subject: Younger brother option

We truly should not fear China, but clearly understand its strategy and long-term plans with regard to Russia in order to formulate sensible policies that correspond to our national interests on this basis. The current bilateral relationship is determined by the goals and current policies of both parties. Therefore, the assertion that everything depends on us ourselves and China plays no role here seems, in my opinion, to be an attempt to avoid impartial research and the consideration of China's strategic goals and practical policies vis-à-vis Russia, as well as to avoid the acute problems that must unavoidably appear in the process of realizing this policy. Unfortunately, our leaders, in going for a political bloc with China, do not understand or do not want to see the consequences of this course of action, which, if continued, will unavoidably lead our country to become the Middle Kingdom's "younger brother," and farewell to the great-power ambitions of our political elite. Finally, I would like to agree with you that only accelerated development will give Russia a chance not to become a Chinese protectorate.

From: Dmitri Trenin
To: Vitali Tsygichko
Subject: It sounds too alarming

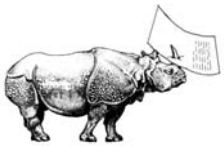
Vitali, I too would like to note the areas where our positions coincide. I agree with the need for impartial research and a discussion of China's strategic aims. I view the *code of silence* on this topic as a vicious matter, although it is possibly caused by the best of intentions ("not to provoke a neighbor," "not to wake evil," etc.). Finally, I am convinced that forming a strategic bloc

with China is not in the interests of Russia, and not just because any great-power ambitions will fall victim to it.

Sino-Russian relations are not only more complicated, but also more contradictory than they appear in the speeches of the Russian president and the CCP chairman. Russia's leaders, whatever they say publicly and however strongly they suspect the United States of trying to *drive a wedge* into "model" Sino-Russian relations, will not accept a *strategic* bloc with China. It's enough to analyze the real development of the two countries' relations in the energy sphere, or look more closely at the Shanghai Cooperation Organization, at the development of the whole system of relations in Central Asia. The Kremlin was not enthusiastic over China's test of an antisatellite weapon in early 2007. Russia's clear move to get away from the limits imposed by the U.S.-Soviet Treaty on Intermediate-range and Shorter-range Missiles (INF Treaty) is officially based on arguments about plans for the deployment of a U.S. antimissile system elements in Central Europe. The move, however, appeared much earlier than U.S. plans became known. Apparently, the real concern is deterring possible threats on Russia's southern and eastern borders.

However, I am not ready at this point to add China to the list of probable Russian adversaries. Although you don't say it directly, such a conclusion can easily be implied. This is methodologically wrong: everything for and against must be discussed, all sides of the problem investigated, and the dynamics of recent changes analyzed; otherwise, you cannot get a reliable conclusion. Instead, you will simply strike an "analytic alarm," which may be useful as a counterweight to nonjudgmental perceptions of our neighbor, but will also be as one-sided as the absence of any criticism.

Your DT



Laura Holgate

NUCLEAR FUEL RESERVE: SOME OUTLINES

On September 19, 2006 at the 50th IAEA General Conference the Nuclear Threat Initiative has presented what we believe is a bold challenge and call to action for member states to take a concrete step towards fuel supply security. I will offer some additional detail on our thinking and suggest areas where further discussions and analysis will be required.

NTI Co-Chairman Senator Sam Nunn described the risks we face in his speech earlier today:

"As more nations seek nuclear energy to meet their development needs, more nations will weigh available options to determine what for them will be the most secure, and most economical way to ensure a reliable supply of nuclear fuel. Some countries will consider building indigenous fuel cycle facilities – a costly choice that would spread these capacities throughout the world and add to the proliferation risks that are inherent to these technologies. Other states will prefer – for economic and security reasons – to import nuclear fuel from other suppliers. It is in our collective security interest to ensure that states have confidence in electing this second path."

Toward this end, NTI is prepared to contribute $50 million to the IAEA to help create a low enriched uranium stockpile owned and managed by the IAEA. We envision that this stockpile would be available as a last-resort fuel reserve for nations that have made the sovereign choice to develop their nuclear energy based on foreign sources of fuel supply services—and therefore have no indigenous enrichment facilities.

NTI's contribution is contingent on two conditions, provided they are both met within the next two years: (1) that the IAEA takes the necessary actions to approve establishment of this reserve; and (2) that one or more member states contribute an additional $100 million in funding or an equivalent value of low enriched uranium to jump-start the reserve.

Nothing in NTI's proposal would limit the rights of nations to pursue peaceful nuclear technology. Our proposal is designed to reinforce the sovereign choice of nations who decide to rely on foreign sources of nuclear fuel. I also want to make clear that the reserve must be designed so as to avoid any interference in the historically efficient and effective operation of nuclear fuel markets.

I want to emphasize that the specific elements of the reserve's arrangements would be up to the IAEA and its member states to decide. NTI's only conditions are that the IAEA take steps to authorize the reserve and that member states match NTI's award on a two-to-one basis. Nevertheless, a number of issues will need to be worked out by the IAEA and member states; I will outline some of these issues today.

RESERVE CONTENTS

One of the first decisions to be made will be the reserve's contents. In order to maximize the flexibility of the reserve, it should probably be in the form of uranium hexafluoride, at an enrichment of 4.9 percent. It would not seem realistic to conceive of a reserve that holds manufactured fuel rods or assemblies given the uncertainty about the customers who would actually need to use the material.

We believe that the minimum credible amount of low enriched uranium held by this reserve would need to be enough LEU for a full core for a standard power reactor. This should be in the range of 50-60 metric tons at 4.9% enrichment. NTI's $50 million contribution combined with the additional $100 million from member states would confidently cover the fuel requirements for at least one full core for a standard nuclear power plant, plus transportation and storage costs. The ultimate quantity of low enriched uranium held by the IAEA as a reserve would have to be determined through an iterative process involving supplier states, customer states, and the IAEA to determine how much uranium is needed to reassure potential customers while avoiding undue market interference. One would expect this reserve to grow as the nuclear power market grows in the future.

NTI has been in discussions with Russia on the potential for an initial purchase of low enriched uranium for this reserve, but there are several sources of such material. To the degree that the low enriched uranium that goes into the reserve is derived from blending down highly enriched uranium, that would be another nonproliferation benefit, but it is not necessary to the effective functioning of the reserve.

STORAGE

Another issue for decision is the location of the reserve. Obviously, the IAEA cannot house an LEU reserve in its Vienna headquarters—a member state would have to serve as the host country for the reserve. In order to be seen as a true back-up to an extant commercial fuel service contract, the reserve almost certainly has to be based outside the six major fuel suppliers. The ideal location would be in a facility that is already licensed to handle low enriched uranium hexafluoride, in order to minimize the need to create new infrastructure. It is inconceivable that material owned by the IAEA would not be stored under IAEA safeguards, and the Agency might determine that an Additional Protocol would also need to be in force. The Agency might further determine that membership in the Nuclear Safety Convention and the Convention on Physical Protection of Nuclear Materials would also be required of the host nation. The costs of storage could be borne by the Agency via a contract with the storage site operators or provided as an "in kind" donation by the host nation, and would be subject to the safety and security regulation of the host state. As the reserve's stocks grow over time, there may be value in having more than one host state as an additional measure of reassurance to potential customer states.

ACCESS

The terms of access would be among the most sensitive aspects of this reserve, and as such would be an extremely important issue to discuss among member states. A key requirement is likely to be that a state wishing to avail itself of the reserve meet their nonproliferation obligations. As with the storage considerations I just mentioned, the LEU supplied by the IAEA would almost certainly have to be used in a reactor that is under IAEA safeguards, and an Additional Protocol might also be required. Participation in the Nuclear Safety Convention and the Convention on Physical Protection of Nuclear Materials would also be reasonable expectations of a customer state. The most important attributes of the access conditions are that they be clearly delineated in advance, and that the judgment on whether a particular state meets the conditions be structured in such a way as to be objective, non-discriminatory, and non-political. This may require some novel decision-making techniques to insulate such decisions from political influence. For example, how would the determination of whether a potential customer state is "in good standing" in meeting its nonproliferation obligations be made?

Would this be a Board of Governors decision, the Director General's decision, or might a special panel made up of representative member states' designated arbitrators make the determination? Some states may require that the release mechanism be established and that pre-approved drawing rights be considered and guaranteed before they are willing to rely on such provisions as a back-up to fuel imports.

PRICING

One key question in considering the impact of such a reserve on the commercial fuel market is the price at which states can gain access to the reserve's LEU. Because the reserve would be designed to reinforce fuel import mechanisms, a contract will generally be in place when a disruption occurs that would trigger a customer state's claim on the reserve. One approach that would guarantee market stability and predictability for customers would be to fix the price for the reserve's LEU at the price contained in the existing contract that is not being fulfilled. If the contract price is significantly below market value, it might create challenges for the Agency to replenish the reserve and member states may be called on to make up the differences between contract price and real-time market prices, but it would prevent states from manufacturing a commercial supply dispute in hopes of obtaining a more favorable price from the Agency's reserve.

FABRICATION

As noted above, the diversity of reactor types among potential customer states argues against holding manufactured fuel in the reserve itself, but that means that the fabrication step needs to be addressed in the design of the reserve. If a state has a fuel import contract in place, fabrication will typically be included in that contract, likely at a different facility than the enrichment facility and, in some cases, in a different country. Whether or not access to fabrication services is threatened when an LEU supply breakdown occurs will differ from case to case. There may be value in developing pre-licensed alternative fabricators who can be turned to should the Agency's LEU reserve be called on by a customer state. This complex issue will require further consideration by member states and industry experts.

EXPORT CONTROL

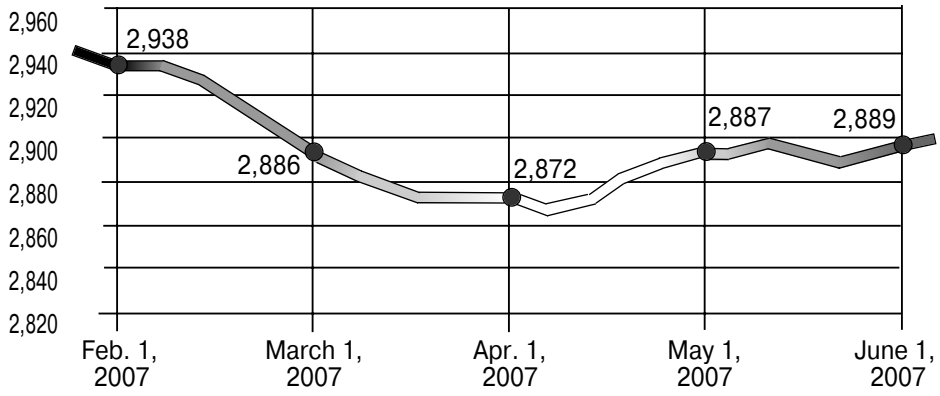
Exports of nuclear materials and technologies are governed by a series of complex, interlocking national and international laws, procedures, and institutions. The basic premise of such rules is to ensure that exported nuclear materials are used only for peaceful purposes and that they are not retransferred if doing so might weaken those assurances. States wishing to provide storage and fabrication services for the Agency's LEU reserve would need to be prepared to make any necessary adjustments in their national export control procedures to guarantee timely and predictable transfer of the Agency's LEU into and out of their national territory. Institutions such as the Nuclear Suppliers Group may also need to develop special procedures to ensure that the Group's policies and practices accommodate the reliable administration of the reserve. This is another area that definitely requires an in-depth discussion among member states and experts to determine how simultaneously to assure eligible customer states that the LEU will be available to them when they need it and supplier states that the material they donate or sell to the Agency will be used appropriately.

PATH FORWARD

These are some of the issues associated with establishing an IAEA fuel reserve, but we believe that they can all be managed and resolved in ways that satisfy potential customer states, supplier states, the nuclear industry, and the Agency itself. There are undoubtedly others that will be encountered along the way. Again, I want to make clear that these ideas are offered in order to advance the discussion of an IAEA fuel reserve; decisions are, of course, the purview of the

Agency and its member states. The key challenge is to begin to address these questions right away so that states can evaluate whether an IAEA fuel reserve meets their requirements for nuclear energy security. To this end, we encourage the IAEA Secretariat to carry out formal and informal consultations with member states and experts in order to prepare the matter for the Board of Governors' consideration. As the demand for nuclear energy grows, we will need creative ways to avoid an associated growth in nuclear risks. All nations share an interest in ensuring a safer, more secure nuclear future.

Figure 1. **The *iSi* International Security Index (January 2007–May 2007)**



➥ **THE INDICATORS OF *ISI* INDEX – A COMPREHENSIVE INTERNATIONAL SECURITY INDEX**

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THE INDICATORS OF *iSi* INDEX – A COMPREHENSIVE INTERNATIONAL SECURITY INDEX

As explained in *Security Index* No.1 of 2007, since June 2006 the PIR Center has been developing a project to calculate an International Security Index (*iSi*)—a comprehensive index of the level of international security. The aim of *iSi* is to provide quantitative indicators that reflect the dynamics of international security trends. The *iSi* index is meant to demonstrate the extent to which the international security situation differs from the "ideal" at each point in time. It also indicates how various specific military and nonmilitary factors are affecting international security. *iSi* is determined in accordance with an original method developed by the PIR Center. It indicates the general level of the state of international security in the military, political, economic, and environmental spheres. The "ideal" situation was determined to number **4,210 points**; i.e., the closer *iSi* is to this number, the more secure the world is. Vice versa, the lower, the higher the level of *iSi* insecurity.[1]

The PIR Center's monthly calculation of *iSi* is accompanied by interviews with our **International Expert Group**, which includes representatives from Russia, Kazakhstan, Brazil, India, China, the United States, France, and Saudi Arabia, as well as other countries. The evaluations of these experts in no way influence the calculation of the Index. Nevertheless, they make it possible for us to examine our calculations: do the evaluations of the global security situation in June or April mesh with the dynamics observed in the Index of the last few months? Which events effected the indicators positively and which negatively? Finally, what are the prospective trends of the *iSi* Index figure in the coming months?

In **December 2006,** *iSi* totaled **3,041 points**. **In January 2007** it **fell by 103 points** for a total of **2,938 points**. In **February** and **March 2007** the Index continued falling and reached **2,886** and **2,872** points, respectively. In **April 2007** *iSi* started growing and reached **2,887 points**. The *iSi* Index figure for **May 2007** amounts to **2,899 points.** This figure is an increase of **12 points** over April 2007.

Among the main factors influencing the *iSi* dynamics for the period we can outline following:

- The "cooling off" of Russia's relations with Western countries (the United States, first and foremost) that we observed in the fall of 2006 only increased over the recent period. The December 2006 U.S. announcement of the possible siting of a U.S. missile defense system in the countries of Eastern Europe was further presented in more detailed form. Further, the discussions in the U.N. Security Council on a Kosovo resolution, on the contents of which Russia and the Western states hold diametrically opposite views, affected the general international security situation in an extremely negative fashion as well. All of this became the reason for several brusque statements by Russian political and military leaders (the "Munich speech" of Russian President Vladimir Putin, the plans for an "asymmetric" response to the U.S. initiative, Russia's plans to exit the CFE, etc.).
- The Iranian nuclear problem posed one of the most serious challenges to international security in December 2006-May 2007. During this period, the U.N. Security Council adopted two resolutions on Iran: Resolution 1737 in December 2006, and Resolution 1747 in March 2007. However, Tehran, calling both documents "illegal," refused to abide by them. Furthermore, in April 2007 Tehran announced the resumption of its uranium enrichment program (and the IAEA has confirmed that this has occurred), as well as its intention to withdraw from the NPT.
- The elevated level of terrorist activity in Iraq and Afghanistan has already become a "traditional" factor. During this period, bloody terrorist acts occurred nearly every day in these countries. Taliban fighters were active in Afghanistan, both participating in military actions against coalition forces and preparing and undertaking terrorist acts.
- As for the North Korean nuclear problem, although in the fall of 2006 it had a sharply negative influence on the *iSi* Index (particularly due to the DPRK's nuclear test), in early

2007 the Six Party Talks saw some progress. An agreement was reached whereby Pyongyang promised to give up the development of its nuclear program in exchange for economic assistance from the global community.

- The post-Soviet space was also marked by instability during this period. Some of the most acute problems that should be mentioned include the Russian-Belorussian gas conflict, the prolonged domestic political crises in Ukraine and Kyrgyzstan, as well as the worsening of Russian-Estonian relations in the spring of 2007 after the Estonian authorities moved a Soviet war memorial.

In general, the international political situation in December 2006-May 2007 was distinguished by its instability. The security challenges were mostly military and political in nature, with terrorist activity fairly high as well. A detailed chronology of the events from December 2006 through May 2007 that influenced *iSi* can be found on the PIR Center website, at: **http://isi.pircenter.org.**

A VIEW BY A *RUSSIAN LIBERAL*: BLOOD AND IRON

For the most part, the many forecasts of future international developments that emerged after the turbulent events of summer and fall 2006 have failed to come true. There was no new war between Israel and Hezbollah. The November 2006 Democratic victory in the U.S. Congress did not cause any significant change in U.S. foreign policy, as many predicted. Instead of the anticipated escalation of tensions in Northeast Asia, the situation in the region has become more or less stable after members of the Six-Party Talks agreed on the freeze of the North Korean reactor in exchange for the provision of energy supplies to the country.

Overall, the global political arena maintained its normal state throughout the winter of 2006-07. Violent clashes between various religious and ethnic groups in Iraq continued, claiming thousands of lives each month. The Taliban fighters continued to target coalition troops in southern Afghanistan. The Iranian leadership ostentatiously persisted in rejecting any compromise on Iran's nuclear program and continued to progress towards obtaining a nuclear weapon. Africa's civil wars and ethnic conflicts did not show signs of reaching an end, but compared to the events in the Middle East they attracted relatively little publicity. Finally, the United States and a number of European countries continued to disagree on some of the major international security issues of the day.

Against this global political backdrop, all in all quite routine and even somewhat dull, Russian President Vladimir Putin's February 2007 speech in Munich captured significant attention. As a matter of fact, his address was perceived as a declaration of a new Cold War. Statements and decisions by the Russian leadership following the Munich speech deepened this impression. Russia's military immediately seized the opportunity by declaring, among other things, the need for Russia to withdraw from the Treaty on the elimination of intermediate-range and shorter-range missiles (INF Treaty). Instantly, a number of questions arose, including the exact reasons for yet another twist in Russian political thinking, the extent to which the militant rhetoric reflected true changes in Russia's strategic choices in the global arena, and potential ramifications that Russia could face if it confronted the West. The *Survey of Russian Federation Foreign Policy* published in late March 2007 not only failed to provide answers to these questions, but clearly demonstrated a doctrinal crisis in Russia's Ministry of Foreign Affairs along with its incapacity to formulate an appropriate view of the outside world and the country's foreign policy strategy.

Naturally, the enduring critical international security issues gave rise to concerns, but it has been most disquieting that neither the international community in general, nor the most pow-

erful and influential states—starting with the United States—were capable of overcoming the inertia of their own political thinking and taking resolute steps towards innovation, which could at the very least discover new and potentially more effective approaches for resolving emerging challenges, if not solve them all together.

Nevertheless, we should not rule out the possibility that the current standstill in world politics is in reality just the calm that precedes the storm, with the Middle East the epicenter of this storm. This region is of crucial importance both to the world economy and to global security. The burning issues in this part of the world are enmeshed together and have become increasingly difficult to tackle, while political and diplomatic efforts seeking to address them are for the most part proving unproductive. Hence, there is a growing probability that in order to stop the geopolitical collapse of the Middle East, force may be used, even though the Iraqi experience shows that military efforts may lead to further political and military destabilization. Finally, if the upcoming months show the failure of the United States to halt the escalation of dangerous trends linked to the Iranian nuclear program and the activity of the Taliban in Afghanistan, the role of the United States as the sole truly global superpower will be called into question.

THE MIDDLE EAST: *BUSINESS AS USUAL*

Throughout the winter of 2006-07, the Middle East remained the source of the major events in international politics, and is likely to preserve this status for a long time. Along with the range of challenges traditional for this region, such as the situation in Iraq, Iran, and Afghanistan, as well as the Israeli-Palestinian standoff, two new potential zones of instability have recently emerged.

The first of them is related to the resignation of Lebanon's five Shi'ite cabinet members allied with Hezbollah, which created a path for a new potential conflict in Lebanon between the country's key political forces, represented primarily by the Fuad Seniora government, and the extremist groups headed by Hezbollah. Quite predictably, Hezbollah refused to comply with the demands of the UN Security Council and disarm its tactical forces. While Hezbollah benefits from Syrian support, the legitimate government enjoys backing from the United States, France, Saudi Arabia, and several other Arab states. If the situation in Lebanon continues to develop in line with existing trends, the country risks turning into another theater of war both between the West and Islamic radical groups, as well as between Sunni and Shi'ite Muslims.

> Marian **Abisheva (Kazakhstan)**, Deputy Director of the Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan – by phone from **Astana**: *I agree on the general dynamics since the beginning of 2007. These figures adequately reflect the changes in world politics. The most negative events which had a harmful influence on the international security climate in Central Asia were those connected with the political confrontation in Kyrgyzstan. No doubt Kyrgyzstan is the zone of instability in Central Asia. In addition to the situation in Afghanistan, the one in Iran and Iraq is very far from ideal. However, in the nearest months I expect a slight increase in* iSi*, because I don't see additional troublesome factors.*

Another emerging are of volatility is Turkey. In April 2007, the Turkish parliament chose Abdullah Gul, the minister of foreign affairs and a member of the ruling Islamic Justice and Development Party (AKP), as nominee for the Turkish presidency. Through this candidacy, the Islamic grouping could obtain virtually complete power in the Turkish government. The opposition immediately appealed the vote results, citing the ambiguity of the quorum required for making this type of decision. Later, Turkey's military command intervened, asserting the participation of Turkey's armed forces in the discussion on the country's secular development and their role as "absolute defenders" of this development course. The military's declaration played a crucial role in the decision to hold early general elections to parliament in July 2007.

Mustafa **Alani (Iraq)**, Senior Advisor and Director for Security and Terrorism Studies, Gulf Research Center – by phone from **Dubai**: *If we sum up the mounting international tension over the Iranian nuclear program, extremely complicated situation in Iraq, and growing tensions in Lebanon and Palestine, we see that the situation in my region is far from improving. And I don't see any improvement in the near future.*

At the same time, it demonstrated that the army was not going to stay away from politics with all that this implies.

Over the past several months, the situation in Afghanistan has not shown any new signs of improvement. At the November 2006 NATO Summit in Riga, it was decided that in 2008 control over the situation in the country would be transferred to Afghanistan's army and security forces, which are currently being formed. By 2008, the Afghani police force is expected to grow from 61,000 to 82,000, and the army from 32,000 to 70,000 troops. In addition, special border control and counternarcotics units will be established. A number of factors cast doubt on the possibility that these plans will be successfully implemented. First of all, several major NATO members, starting with France, Germany, Italy, and Spain, are refusing to send their troops to combat regions in southern and southeastern Afghanistan. As a result, the brunt of the actual fighting with the Taliban lies heavily on U.S., U.K. and, to a lesser degree, Canadian troops. The key argument put forth by the above-mentioned European powers in defense of their policy stance is the excessive role that the United States attributes to military operations. In the opinion of these countries, the proper countermeasures against the Taliban and other extremist forces should be based on encouraging the country's economic development and addressing the most urgent social and economic issues. This approach is probably correct in the long run, but its results would not be seen for at least another several years, whereas the Taliban forces could attempt a major attack in the spring and summer of 2007, which could only be repelled through the use of military force.

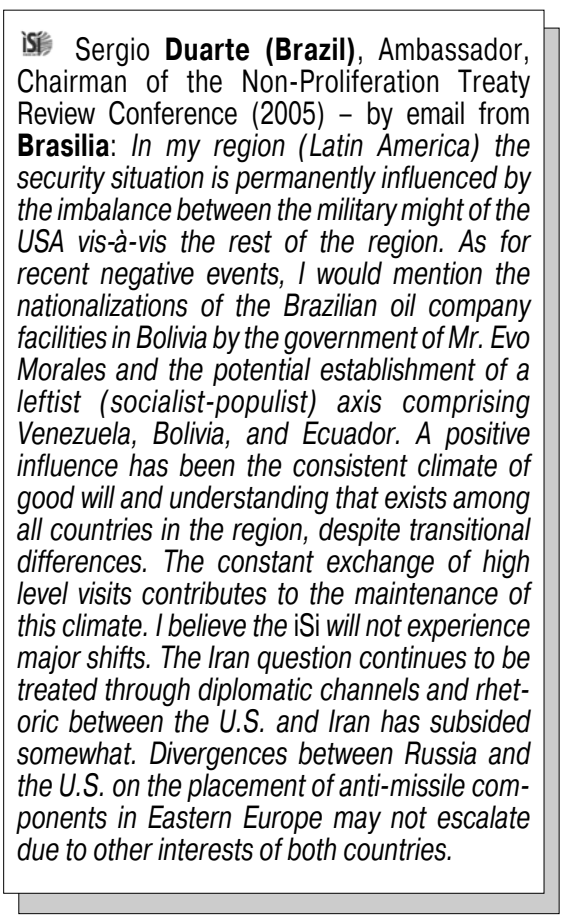
Another factor that puts successful improvement of the situation in Afghanistan in danger is the situation in tribal zones and other vast areas along the Afghan-Pakistan border. Pakistani government and international coalition forces have virtually no control over the majority of these areas. U.S. directives for Islamabad to step up its efforts in countering the Taliban and al-Qa'ida activity in this region have spurred growing anger and dissatisfaction among the Islamic groups in the Pakistani establishment, including the army and intelligence agencies. Experts believe that Pakistan's secret service is relatively effective in pursuing and countering al-Qa'ida activities, but provides various types of assistance to the Taliban. The position of General Pervez Musharaf, who is forced to balance between the United States and the Islamic groups, has become ever more challenging, which in the relatively near future may have quite unpleasant consequences both for the current Pakistani leader and for the region as a whole. Finally, the prospects for the Afghani government headed by Hamid Karzai to form an operational army and police force remain quite unclear.

In short, neither the government in Kabul nor the international coalition forces have the necessary military contingent to establish effective control over Afghanistani territory, especially over the country's southern and southeastern parts. Therefore, a rapid stabilization of the situation in Afghanistan (within a year or year and a half at most) is not likely. At the same time, if NATO decides to withdraw its troops from Afghanistan, it is almost certain that Karzai's government will be replaced by the Taliban. If that occurs, it would be a great geopolitical failure for NATO and the Western powers in general. None of the Western leaders is keen on seeing this happen. Hence, operation Enduring Freedom will go on as planned, international coalition forces will keep their troops in Afghanistan, and U.S. troops will maintain their presence in Central Asia, but NATO's ability to effectively provide the necessary security measures outside of its sphere of influence will continue to be called into question.

The developments in the Palestinian territories are also no reason for optimism, despite the February 2007 success of Hamas and Fatah in finally forming a national unity government through Saudi Arabia's mediation. This progress may stabilize the situation in the West Bank and the Gaza Strip to a certain degree, but will be unlikely to lead to a breakthrough in the

Israeli-Palestinian conflict, since Hamas still refuses to recognize Israel's right to exist. In its turn, Israel, with U.S. support, refuses to recognize the Palestinian unity government as long as it includes Hamas representatives. This policy in Tel Aviv draws frequent criticism from those circles (both in Israel and the West) that believe in the strategy of engaging Hamas, thinking that cooperating with terrorists may pay off better than fighting them. At the same time, disagreements between the moderate, so-called "political," wing of Hamas, and its military units perceived as being extremist are also noteworthy. There is, however, no certainty that the strategy of engaging extremist and terrorist regimes and movements is well-founded. Once again, the question that arises is the following: can mild treatment of such political constituents change their very nature?

All the challenges described above seem relatively insignificant compared to the situation in Iraq and the recent developments around the Iranian nuclear program. The situation in Iraq is growing increasingly complicated. Ethnic and religious clashes are turning into a civil war that spans much of the Iraqi territory, first and foremost cities and provinces where Sunni and Shi'ite Muslims or Arabs and Kurds live in close proximity. The flow of migrants to neighboring countries is reaching unprecedented levels: according to the United Nations, 2 million Iraqi citizens have become refugees and another 1.8 million are listed as displaced persons, having been forced to leave their homes and move to regions where people of similar religious beliefs or ethnic origin are in the majority. These events have created fertile soil for the emergence and spread of extremist sentiments and terrorist movements. Separatist ambitions in the region are growing stronger. Economic challenges are deepening. The prospect of other states intervening in Iraq is becoming increasingly possible.



For example, Syria is providing support to the remaining Ba'ath party cells in Iraq. Moreover, Syria's territory continues to be used for the transit of foreign militants and Sunni terrorists. Iran, in turn, is financing, arming, and providing logistics to militant units of Shi'ite extremist organizations. Saudi Arabia, Jordan, Kuwait, and Turkey are all trying, among other things, to neutralize the influence of Shi'ite Iran in both Iraq and the region as a whole. In addition, Ankara is concerned with the developments in Iraqi Kurdistan and the prospects for the formation of a *de jure* or *de facto* independent Kurdish state, which would almost inevitably become the center of gravity for the Kurdish population of southeast Turkey. It is no coincidence that in late February 2007, General Yasar Buyukanit made unambiguous threats towards the leadership of Iraqi Kurdistan, threatening a direct military intervention in the event of the country's "break-up," i.e. if Turkey's southeastern provinces join the prospective Kurdish state. Thus, there has been a real possibility of Iraq becoming something of a "black hole" in the Middle East, a sort of "geopolitical funnel" pulling in neighboring states.

The question of whether or not an "engagement strategy" applied to extremist regimes is effective becomes especially relevant in relation to the

actions of the current Iranian leadership, which is stubbornly moving towards developing a nuclear weapon and sabotaging the demands of the UN Security Council in the most provocative way. Predictably, Tehran flagrantly ignored UN Security Council Resolution 1696, adopted on July 31, 2006. Following this, the UN Security Council adopted Resolution 1737 in December 2006. The undeniable advantage of the new resolution is the fact that it denounces the obstructionist policies of Iran; however, it also shows the incapacity of the UN Security Council to develop effective measures that would be capable of bringing leaders in Tehran back to their senses. To a large degree, this is the result of the "double standards" policy of Russia and China, as both countries press to minimize the sanctions against regimes caught developing their own nuclear weapons and thus violating the obligations of the Non-Proliferation Treaty.

UN Security Council Resolution 1737 states that "Iran has not established full and sustained suspension of all enrichment-related and reprocessing activities [...], nor resumed its cooperation with the IAEA under the Additional Protocol, nor taken the other steps required of it by the IAEA Board of Governors, nor complied with the provisions of Security Council resolution 1696 (2006)."[2] The resolution also notes that the Security Council is acting under Article 41 of Chapter VII of the Charter of the United Nations. In other words, it recognizes that Iran's actions constitute a threat to global peace, the elimination of which requires international sanctions that do not, however, provide for the use of force.

Based on this information, in December 2006 the Security Council voted that Iran must stop "all enrichment-related and reprocessing activities, including research and development" as well as "work on all heavy water-related projects, including the construction of a research reactor moderated by heavy water."[3] Further on, the Security Council required all states to take the "necessary measures to prevent the supply, sale or transfer directly or indirectly from their territories, or by their nationals or using their flag vessels or aircraft to, or for the use in or benefit of, Iran [...] of all items, materials, equipment, goods and technology which could contribute to Iran's enrichment-related, reprocessing or heavy water-related activities, or to the development of nuclear weapon delivery systems."[4] In other words, the evaluation of Iran's actions is quite clear, and the requirements of the UN Security Council are fairly explicit.

Yet it has been clear from the start that measures designed by the Security Council to encourage Iran to comply with its demands would be ineffective. Indeed, the resolution simply calls for all states to freeze financial assets and economic resources owned or controlled by Iranian individuals and legal entities who participate in the development of nuclear weapons and their delivery systems. The list of 12 such entities and 12 individuals whose assets are subject to a freeze include the Atomic Energy Organization of Iran (AEOI) and the Defense Industries Organization, as well as, for example, General Yahya Rahim Safavi, commander of the Islamic Revolutionary Guards. As could be expected, these sanctions failed to have any effect on the Iranian nuclear program. Quite possibly, the AEOI and General Safavi do not keep their assets in Western banks, or at least do so under different names and credentials.

UN Security Council Resolution 1747, adopted in late March 2007, does not resolve the Iranian nuclear issue either. As a matter of fact, the only difference from the December 2006 resolution is the more extended list of Iranian entities and individuals who are subject to specific, yet not overly harsh, sanctions.

The developments in the Middle East bring up an ever more pressing question: what is to be done? This question first emerged in the 19th century among the Russian pseudo-liberal *intelligentsia* concerned with their own social vulnerability. Today, this question is a source of growing distress among political elites of the world's most powerful state.

THE UNITED STATES: BEFORE A CHANGING OF THE GUARD

The November 2006 midterm congressional elections were in a certain sense a referendum on U.S. policies in Iraq, and suggested that a Democrat victory in the approaching 2008 presidential election is nearly inevitable—it could only fail to come to pass if the present adminis-

tration undertakes some successful and atypical measures that can radically turn the tide either in Iraq, Iran, or Afghanistan.

Harsh criticism of the war in Iraq was the Democrats' key bargaining chip that they successfully used to appeal both to the American public's natural fatigue with the war proper and, more importantly, to their growing conviction of the lack of prospects for the U.S. military presence in Iraq, as the military has not been able to stop either the civil war or the growing wave of terrorism in the country. On the eve of the midterm elections, 61 percent of Americans opposed the war in Iraq, and 56 percent believed that it made the United States more vulnerable to the threat of terrorism.

Nonetheless, the new balance of power between the newly-Democratic Congress and the presidential administration did not spur the formation of a bipartisan foreign policy, particularly on the issue of Iraq. One of the key reasons for this has been the fact that the Democratic Party has virtually no broad-based foreign policy agenda that could obtain the approval of at least the majority of influential party members, if not all of them. In particular, by spring 2007 Democrats had not come up with a unique standpoint on the most pressing challenge of U.S. foreign policy: deployment of U.S. troops in Iraq. Senator Barack Obama—a rising, though somewhat peculiar star of the Democratic Party—insisted on the immediate withdrawal of U.S. troops from Iraq. The experienced politician Senator Joseph Biden advocated the proposal that Iraq be split into three separate and virtually independent entities, each of them becoming home to a distinct ethnic or religious group. Howard Dean, Chairman of the Democratic National Committee spoke in favor of a phased redeployment of the U.S. military contingent in Iraq. Senator Hilary Clinton, the most likely presidential contender from the Democratic Party, on the other hand, voted in favor of the war in Iraq and is now using all means possible to reinforce her relations with the military.

Yet the problem does not lie in disagreements between various Democratic leaders alone. The more important challenge is the Democratic party's understanding that in the event of a highly possible Democratic presidential victory, the task of solving the toughest issues in the Middle East would become their responsibility—and that at a time when neither they, nor any other segment of the U.S. political establishment, possesses any real solution to the problem. Given all of this, the Democrats basically have just one source of leverage over foreign policy, the administration's course of action in Iraq in particular. This leverage is their control over the budget and option to cut expenditures on the relevant budget items. However, if the Congress were to approve budget cuts for the war in Iraq, the Democratic Party would immediately be accused of leaving U.S. soldiers in Iraq without adequate resources.

There is also no clarity on the type of approach that the Democrats may use in the other key area of U.S. foreign policy—the country's relations with China. Many Democratic leaders in Congress have always viewed China with suspicion and openly showed their preference for Taiwan. For instance, influential Congressman Thomas Lantos has often spoken of China as a "troublemaker," and Sherrod Brown, co-founder of the Congressional Taiwan Caucus, has been recently elected Senator. In addition, the seat of the Speaker of the House of Representatives went to Nancy Pelosi, renowned for her critical appraisal of human rights violations in China and distortions in Sino-American trade relations. In general, compared to the Republicans, the Democrats are much more concerned with the rapidly growing U.S. trade deficit vis-a-vis China, which in 2006 exceeded $180 billion. Hence, if Democrats come to power in 2008, U.S. policy towards China may take on a harsher and more ideological nature. Similar changes may occur in U.S. relations with Russia, as the Democrats are traditionally more sensitive to displays of authoritarian power and human rights violations than their Republican opponents.

Actual U.S. policy in Iraq remained unchanged. Chances are that Donald Rumsfeld's resignation was a tactical move that the administration used to deflect criticism away from the U.S. President George W. Bush for the failure in the Middle East. In any event, his resignation did not initiate a search for a new strategy that would take into consideration lessons drawn from the war in Iraq. On January 10, 2007, Bush announced the enlargement of the U.S. military contingent in Iraq by another 21,000 troops. The Democrats failed to get the Senate's approval for a resolution condemning this policy choice. Along with increasing the U.S. military pres-

Konstantin **Eggert (Russia)**, Editor-in-Chief of the BBC Russian Service Moscow Bureau – by phone from **Moscow**: *The causes of the slight increase in* iSi *were due to the fact that the expected Russian-Western confrontation over the Iranian nuclear program didn't happen and, secondly, the political crisis in Ukraine was settled without the use of armed force. The most negative impact I would call the events in Russian-Estonian relations. There was a substantial growth of mistrust in Russia, as a country whose policy towards its neighbors is irrational and is based on the logic of domestic politics.*

ence in Iraq, the administration is trying to transfer the burden of pacifying the warring Iraqi factions to the Iraqi police and army, which are currently being formed. The U.S. military is expected to act as advisors and ensure safety in the relatively more secure areas and certain critical zones, including Baghdad.

Along with reinforcing the U.S. military component in Iraq, there have been efforts to involve Syria and Iran in stabilizing the country. Both states have a major impact on the situation in Iraq. At first glance, the idea deserves consideration. The question, however, is *what* Washington can offer Tehran and Damascus in exchange for their assistance in resolving the crisis in Iraq. The diplomats have initiated some cautious contacts but, predictably, they have not brought any significant results—the parties simply exchanged mutual recriminations. That is understandable: Tehran is using its Shi'ite supporters in Iraq as one of its key bargaining tools in negotiations with the United States, hoping to force Washington to make concessions on Iran's nuclear program. Washington can hardly find this trade-off acceptable.

Without a doubt, Iraq remained the most painful foreign policy challenge the United States had to face in the winter and spring of 2006-07. That said, U.S. leadership's decision to increase the country's military contingent by 21,000 troops was probably the least appropriate of all possible options. The number of additional troops is too few to have any real influence on the balance of power in Iraq, especially considering the continued cuts in the military contingents of other international coalition members stationed there, including the United Kingdom. At the same time, this decision angers the public both in the United States and its allies. It shows that the White House is prepared neither to withdraw from Iraq nor forcefully to suppress Sunni and Shi'ite extremist groups—either through the use of its own resources or, for example, by partially relying on Kurdish units. At the same time, the United States is neither ready to split Iraq into three separate entities, nor to implement any other radical measures capable of bringing the situation out of deadlock.

Undoubtedly, the withdrawal of U.S. troops from Iraq or the country's split into smaller ethnic or religious entities may lead to a steep escalation of violence both in Iraq and the region as a whole, but in the end it could result in a new and more stable realignment of forces. Notably, Fred C. Iklé, the ideological leader of many current supporters of hard-line defense and security policies and a member of the Pentagon's Defense Policy Board, declared: "Enormous and incredible mistakes in Iraq may end up driving us out, but if we handle the exit correctly it will not make the US more vulnerable, and can be made worse for our jihadist adversaries who are killing each other."[5] This standpoint has a certain logic, considering that the clashes between radical Sunni and Shi'ite factions are bound to intensify after the international coalition troops withdraw from Iraq. Eventually, the extremists on both sides will exhaust their resources in bloody internecine fights, whereas moderate circles loyal to the United States will see their influence grow and will be able to get ahead.

Nevertheless, this possibility also presents certain risks. The emergence of a *de jure* independent state of Kurdistan will most likely grow into a center of gravity for Kurds living in Turkey and Iran. Consequently, this will lead to major resistance against Turkey, the key U.S. ally in the region. There is much speculation that Iran's influence in the southern part of Iraq, mostly inhabited by Kurds, may grow considerably, which by no means meets U.S. interests. According to the Western media, one of the most powerful opponents of this option, as well as the withdrawal of U.S. troops from Iraq, is the CIA. The agency justifies its views first and foremost by the likely creation in western Iraq of a powerful base for international Islamic terrorism.

At the same time, it claims that the emergence of a Kurdish state will lead to a steep increase in Iran's presence in a political environment where a military operation against Iran may become a reality. On the other hand, it is also quite possible that Shi'ite leaders in southern Iraq may not wish to turn into Tehran's satraps or marionettes. In that case, they could become a great asset for the United States in its future operations against Iran.

TURKMENISTAN AFTER TURKMENBASHI

The death of Turkmen dictator Saparmurat Niyazov, better known as the "Father of all Turkmen" (that is how the title Turkmenbashi is translated), temporarily drew the world's attention to this small gas-rich country lost in the sands of the Karakum desert. The world press, and especially the Russian media, eagerly discussed whether the dictator died of natural causes or was poisoned by members of his inner circle angered by his extravagant escapades. The media enthusiastically argued about who will inherit the billions of dollars that, rumors say, lie in Niyazov's bank accounts in Germany, and speculated over whether it was appropriate to look for similarities between the change of leader in Turkmenistan and the processes that unfolded in the Soviet Union after the death of Stalin. These questions, no matter how interesting they might be for the general public, in reality do not have much significance. Much more important is the fact that the events in Ashgabat demonstrated the strategic importance of Turkmenistan for developments in the Caspian Basin and Central Asia. This strategic importance is defined by two major factors.

The first one is the future *export channels for Turkmen gas*. Russia is extremely interested in obtaining at least the majority of Turkmen gas exports, if not the entire amount, in order to compensate for expected decreases in its own gas production. Europe, in turn, is trying to avoid further dependence on Russian gas exports, and would be interested in using Central Asian gas, and especially gas from Turkmenistan, to diversify its energy supplies. Therefore, the issue of building a Trans-Caspian gas pipeline has a great chance of being in the center of an EU-Russia rivalry. The prospects of finding a solution will largely depend on Ashgabat's standpoint, which, in turn, will be closely tied to foreign policy choices made by the new government. At the same time, if Ashgabat supports the Trans-Caspian pipeline initiative, there will be a real possibility that another pipeline across the Caspian will be built, but this time carrying oil and linking Kazakhstan's offshore platforms in the Kashagan region to oil terminals near Baku.

The second factor leading to the growth of Turkmenistan's importance in Eurasia is the dynamics of its domestic politics. A number of experts suggest that the December 2006 passing of the Turkmen leader and the anticipated change of leadership in Kazakhstan and Uzbekistan will create a power vacuum in these states—a vacuum that will automatically or almost automatically lead to clashes between the competing elite factions and potentially spur a nationwide political or even military crisis. Domestic political processes in Turkmenistan may confirm or invalidate such scenarios, even though in both cases it will be necessary to consider the specific nature of the situation in the country.

After the natural (or criminal) death of Niyazov, power in the country fell into the hands of the National Security Council or, more precisely, in the hands of a "junta" composed of several council members, including the heads of the army, security services, and police, as well as their protégé—newly elected Turkmen president Gurbanguly Berdimukhammedov. It is difficult to chase away the impression that all these people were prepared for Niyazov's death, so quickly and with so much coordination and determination did they act, taking just several hours to imprison the chairman of the National Security Council (*Halk Maslahaty*), who, following the president's death, had the constitutional right to assume power and gain full control over the country. It is even more difficult to dismiss the idea that the new presidential candidate was chosen by the leaders of the national security agencies precisely because he does not have either his own power base or, most likely, a political base, and therefore cannot represent an existing or potential threat to any single member of the junta. At the same time, his election eliminates the possibility for any one of them to be promoted to the top position of power. This arrangement allows the existing political elite to preserve the balance of power in top political

echelons and thereby to avoid a power struggle, at least for the first few months after Niyazov's death. If this model is correct, the future of Turkmenistan will largely depend on whether the junta members succeed in building their mutual relations in such a way as to avoid a cutthroat rivalry over control of the "crown jewels" of the country's economy (its most lucrative branches in the official, shadow, and criminal economy), and whether they manage not to provoke a deep crisis in the country.

It is also important to note another issue: Turkmenistan's long-term stability depends on whether the new government succeeds in incorporating the leaders of several dozen different regional and institutional clans and cliques into the national power structure. These clans for the most part have tribal origins and possess *de facto* control over individual regions, provinces, sectors of the economy, criminal networks (especially drug trafficking and transit through Turkmenistan), or specific sectors of the bureaucratic system, such as the security services and the army. The late ruler of Turkmenistan succeeded in significantly undermining the power of such factions. Their top elements emerged in Soviet times, but have either been subject to political repression, were forced to leave the country, or had to lay low and abandon their claims to power and influence, or at least their open manifestation. The majority of top political offices during the Turkmenbashi era were controlled by natives of the Akhaltekin clan, promoted by Niyazov who was an Akhalketin himself, even if these new political leaders were not related to the previous political elites. Possibly the only exception to this rule was Akmurad Rejepov, an extremely powerful Chief of the Presidential Guard and Niyazov's confidant, who belonged to the Ersari tribe (but who has since resigned, leaving the government in May 2007). In other words, the potential opponents of the current ruling junta have found themselves quite weakened. Yet the clan structure of Turkmen society and Turkmenistan's elite has been preserved, and that inevitably leads to the emergence of a new generation of clan leaders who sooner or later (most likely sooner rather than later) may enter the race for power. These realities put the new Turkmen leadership face to face with the following question: should the government continue the policy of trying to suppress clan elites, or should it instead develop a new form of relations with the clans, inviting their members to participate in checks and balances?

Thus, the stability in Turkmenistan and other Central Asian states during a transfer of power depends on whether the ruling elites succeed in avoiding sharp clashes of interests between various factions, clans, and cliques—clashes that go beyond some accepted limits (though the criteria differ for each individual case). In the meantime, there has been fresh evidence that the newly-elected Turkmen president is distributing political offices to some of the well-known political figures who were in disgrace during the last years of Niyazov's rule. In particular, Tachberdy Tagiyev, a former minister of the oil and gas industry who was forced to resign in 2003, was recently appointed deputy prime minister in the new Turkmen government. It is possible that by inviting such personalities into the official government, Berdimukhammedov is trying to establish his own political base and limit the influence of Turkmenistan's prominent figures over his policies. The potential outcome of this policy course is quite controversial. On the one hand, the boundaries between the real or potential opposition and the ruling elite become eroded. On the other, however, the top circles of power are expanding to incorporate individuals and groups that aspire to obtain specific economic or bureaucratic resources.

iSi Harald **Mueller (Germany)**, Director of the Peace Research Institute – by email from **Frankfurt am Main**: *The incipient quarrel between Russia, NATO, and the United States over the missile issue and Kosovo signals a deterioration. In addition to what I mentioned, the deterioration in the situation in Iraq (despite the much heralded U.S. effort to pacify Baghdad) and Afghanistan bodes badly for world security. The Iran situation is equally worrisome. In Europe, the formation of a united government in Northern Ireland and the improvement in the German economy (projecting better growth for all of Europe) positively influenced* iSi*: rising welfare equals rising security. The* iSi *might remain equal or improve slightly because of efforts to mend fences between NATO/U.S. and Russia.*

Given this state of affairs, it is difficult to expect any noteworthy changes in Turkmenistan's foreign policy in the coming months. The interests of the country's leaders will be focused on domestic problems, in particular the distribution of the former leader's legacy and the establishment of a new balance of power among the various factions and clans. The ruling junta is unlikely to welcome external interference in these issues, and thus will continue creating an impression that it plans to continue the previous political course and maintain all of its gas exports commitments.

THE KOREAN PENINSULA: CALM AFTER THE STORM

The missile and nuclear tests that the Democratic People's Republic of Korea (DPRK) conducted in summer and fall 2006 presented the international community with yet another serious challenge. The numerous predictions and analyses that appeared after the tests forecast the aggravation of the political and military situation in the northern Pacific. A particular emphasis was on how well the United States would be able to reestablish Japan and South Korea's confidence in the reliability of American extended deterrence and security guarantees in order to prevent these states from creating their own nuclear weapons in response to the North Korean nuclear ambitions. There have been discussions of increasing assistance to Japan (and potentially also to South Korea) in creating effective anti-ballistic missile systems capable of neutralizing North Korea's ballistic missiles. The United States intensified its political and diplomatic relations with China. The Chinese government has been extremely alarmed by Pyongyang's actions, with part of its exasperation caused by the possibility that the DPRK could have a "nuclear domino" effect on the region. For Beijing, such a development would be extremely undesirable. The United Nations and other international organizations continued to exert pressure on North Korea in order to isolate Pyongyang politically and diplomatically and prevent it from transferring its nuclear materials and technologies to extremist groups and regimes. Economic sanctions against North Korea remained in place, including the freeze on bank accounts in Macau's Banco Delta Asia, until after the time period covered in this review.

These developments should have been expected. Yet as recently as mid-winter 2006-07 it was still hard to imagine the possibility of a rapid mitigation of the situation around North Korea and its nuclear program. Nonetheless, on February 13, 2007, during the so-called *third session of the fifth round of the six-party talks,* the participant states reached an agreement on "initial actions for the implementation of the Joint Statement" of September 19, 2005.

It was agreed that during the first phase of implementation of the Joint Statement, which was to last 60 days, the DPRK would shut down and seal "for the purpose of eventual abandonment" the Yongbyon nuclear facility, including the reprocessing facility, and invite back IAEA personnel to conduct all necessary monitoring and verification "as agreed between IAEA and the DPRK." In addition, during this phase the DPRK would discuss with other parties a list of all of its nuclear programs as described in the Joint Statement, including "plutonium extracted from used fuel rods, that would be abandoned pursuant to the Joint Statement." At the same time, the DPRK and the United States must start bilateral talks aimed at resolving pending bilateral issues and moving toward full diplomatic relations. Similar talks must be initiated between the DPRK and Japan with the aim of taking steps to normalize their relations in accordance with the Pyongyang Declaration, "on the basis of the settlement of unfortunate past and outstanding issues of concern." In its turn, the United States will begin the process of removing the designation of the DPRK as a state-sponsor of terrorism and advance the process of terminating the application of the Trading with the Enemy Act with respect to the DPRK. The parties agreed to the provision of emergency energy assistance to the DPRK for the first 60 days, with the initial shipment of emergency energy assistance equivalent to 50,000 tons of heavy fuel oil (HFO). The parties also agreed on the establishment of five working groups in order to carry out these initial actions and for the purpose of full implementation of the Joint Statement.

During the next phase of implementation of the Joint Statement, the DPRK would provide "a complete declaration of all nuclear programs" and "disable all existing nuclear facilities," including graphite-moderated reactors and a reprocessing plant. The DPRK will receive eco-

iSi William **Potter (United States)**, Director of the Center for Nonproliferation Studies, Monterey Institute of International Studies - by email from **Monterey**: *The news on significant Iranian advancement in uranium enrichment significantly destabilizes regional as well as international security. The proceeding aggravation in Iraq also impacts negatively. It was beneficial for the U.S. secretary of state to interact, if only briefly, with her counterparts from Syria and Iran. The better than anticipated outcome of the NPT Preparatory Committee meeting also was a positive development. There also seems to be a continuing relaxation of tensions in Northeast Asia despite delays in implementing the 6 Party agreement with the DPRK. I anticipate that the* iSi *index will continue to rise as the U.S./Western line hardens toward Iran in response to news of progress it has made in operation of its centrifuge program.*

nomic, energy, and humanitarian assistance up to the equivalent of 1 million tons of HFO.

At first glance, this agreement seems like a clear success for the North Korean regime. Not only did Pyongyang obtain the economic assistance that it so desperately longed for, but it also succeeded in attaining U.S. consent to pursue official direct negotiations, which constituted one of the key political goals of the North Korean leadership. Moreover, there are talks about potential negotiations on establishing diplomatic relations with North Korea. And the only thing that the DPRK has to do to attain such treatment is to close down its nuclear reactors in Yongbyon (whether all of the reactors or just some of them remains unclear) and put them under IAEA safeguards. Yet there is no guarantee that North Korea will not *unfreeze* its reactors in the future and cut off access to IAEA inspectors, as it already did in the early days of the current nuclear crisis on the Korean Peninsula. One of the most crucial issues—how many nuclear warheads and explosive devices remain in the DPRK's possession and how and when they will be destroyed—has not been addressed. Moreover, the United States stepped away (temporarily, perhaps) from the fair demand for the complete, verifiable, and irreversible denuclearization of the DPRK. In addition, Pyongyang obtained an opportunity to continue perfecting its nuclear explosive devices. This point is extremely important, as the low yield of the North Korean nuclear explosion carried out in the fall of 2006 was most likely due to the unsatisfactory functioning of complex electronic and other systems. Furthermore, according to expert estimates, North Korea has enough plutonium to build five or six nuclear weapons, and possibly even more.

Nonetheless, there are certain advantages to the current soft U.S. policy towards the DPRK nuclear program. Washington gained an opportunity to concentrate its efforts, as well as its political and military resources, on the Middle East. The United States demonstrated to the world its flexibility and willingness to compromise, which refutes the common opinion of the current U.S. administration as being *unintelligent* conservatives ready to use force with or without a reason and incapable of cunning political play. Finally, having eased the tensions in the Far East, Washington made a very important step towards China, which is very concerned by the possibility of events in its neighborhood spiralling out of control and complicating the modernization of China's economy and the military—the two issues that are of crucial importance for Beijing.

THE RUSSIAN FACTOR

Putin's Munich speech was widely perceived as a modern equivalent of the well-known Churchill discourse in Fulton that triggered the Cold War. Time will tell whether or not the performance of the Russian leader initiates a new round of confrontation. In any event, his speech has already launched a massive anti-Western campaign instigated by both the military authorities and the Russian Ministry of Foreign Affairs.

A number of top Russian military officials called for Russia's withdrawal from the INF Treaty. This is not the first time that this idea has been put forward, but previously its promoters tend-

ed to be retired generals who no longer had any formal links to the military establishment. Today, by contrast, the call is almost the official platform of Russia's Ministry of Defense. The key argument in favor of leaving the treaty is the perceived threat to Russia's strategic forces of the future U.S. missile defense system being deployed in Europe. This argument raises strong doubts: the antiballistic missile system that the United States is planning to install in Poland is simply incapable of striking intercontinental ballistic missiles (ICBMs) launched from Russia. In order to succeed, they need to possess truly extraordinary performance characteristics that are unachievable in the foreseeable future, starting with speed. The time factor too should not be ignored. The launch of an antiballistic missile can only take place after the detection of a Russian ICBM's launch, and only if the potential margin of error has been eliminated. In addition, it is essential to determine, even in the most general form, the flight trajectory of the missile. Only then can the decision to launch an antiballistic missile be made. All these steps require time, even if it is just a matter of several minutes. These short minutes may make the ICBMs simply unattainable. Finally, it is unclear how in fact ten antiballistic missiles can pose a threat to Russian strategic forces that possess several hundred ground-based intercontinental missiles, especially since the launch sites of many of them are more than a thousand miles away from Poland.

It is certain that Russia's withdrawal from the INF Treaty would solidify NATO and lead to the deployment of U.S. intermediate-range ballistic missiles in Europe. In other words, the world will see a repeat of the missile crisis of the 1970s-1980s. Not only would such a development severely aggravate the political and military situation in Europe, but it would also dramatically damage Russian security. It is important to recall that if the Soviet government had agreed to the "zero" option on INF during the second half of the 1980s, it was not out of ambitions for nuclear disarmament. At the time, the Soviet General Staff had no doubts that U.S. Pershing and cruise missiles deployed in Germany, the Netherlands, and the United Kingdom could deliver several hundred precision nuclear warheads to the major centers of political and military control of the Soviet Union in just 10-15 minutes. For comparison, today such missiles (or their more advanced analogues) can be placed much closer to Russia's borders.

It is possible that having realized the danger of withdrawing from the INF Treaty, Russia responded to the prospects of U.S. deployment of missile defense systems in Poland and the Czech Republic by declaring a "moratorium" on observing the Treaty on Conventional Armed Forces in Europe (CFE). Most likely, this will not spur a harsh reaction from the Western powers, as in many respects, the CFE Treaty in its original form is desperately outdated. At the same time, the moratorium on observing the CFE Treaty cannot possibly obstruct the deployment of missile defense systems in Central Europe. In addition, Moscow's decision once again raises the question: what exactly is Russia trying to achieve in the global arena?

The stance adopted by Russia's military command is understandable. It is in the nature of military defense planners (and not just in Russia) to make decisions based on the perceived capacities of the real or potential opponents rather than their intentions. At the same time, the Russian military has to take into consideration the relentless deterioration of its conventional armed forces. As a result, higher stakes are being placed on nuclear weapons. Finally, the military believes that the more nuclear missiles, submarines, etc. Russia has, the more solid the country's security. This last statement, however, is fundamentally wrong. The Soviet Union lost the Cold War despite the vast stockpiles of nuclear and conventional weapons it possessed.

The view of the Ministry of Foreign Affairs is less clear, even though the ministry closely identifies with the stance of military command. Diplomacy is meant to reveal the intentions of partners, competitors, and opponents, and take them into consideration, bearing in mind a wide range of factors and trying to undertake a deep analysis of international realities instead of assuming the most dangerous alternative (since in the current case, this alternative would be quite unrealistic).

It is true that to achieve this goal, considerable intellectual capabilities are necessary. In the meantime, the MFA-published Survey of Russian Federation Foreign Policy leaves a negative impression. For instance, it notes: "*The chief achievement of recent years is the newly acquired foreign policy independence of Russia.*"[6] Involuntarily, the question arises: has Russia's fierce opposition to NATO's expansion to the East for most of the past decade been

imposed by factors lying beyond its borders, for example, Washington? It is equally interesting to read the following passage: *"The internal strengthening of Russia makes our foreign policy more purposeful and productive...*."[7] This statement arouses a natural desire to ask what is meant here. Does this passage allude to the fact that manipulations of gas prices repelled Russia's only ally, Belorussian president Lukashenko, who frantically started mending relations with the West beginning in early 2007? Does the Russian Ministry of Foreign Affairs really believe that if cities in southern Russia come into the range of Iranian nuclear missiles, this would be in Russia's national interest? If not, why is Russian diplomacy persistently aimed at blocking UN sanctions against Iran that could effectively encourage Tehran to halt its nuclear program, whereas the diplomats' exemplary determination is worthy of a better cause?

Perhaps the most interesting theoretical achievement of the Russian MFA is the repetition of an old thesis dating from the Gorbachev era, which makes a reference to a "stable, just, and democratic world order" that could be achieved through active participation in the work of the United Nations. The authors of the Survey are probably unaware that the very notion of "justice" is extremely subjective, and reflects the interests of specific individuals or social groups. Yet this is not the most important issue. Much more significant is the fact that democracy is a type of political power where citizens delegate their power to elected officials, decisions are taken by majority vote, and the rights of minorities are protected by law which is followed to the letter. Knowing that, the course towards forming a just and democratic world order means nothing else, in essence, than the creation of a world government where the majority would belong to developing countries and China. Does Russia's MFA realize that the call for establishing a democratic world order is pretty much identical to the concept of limited sovereignty, which is perceived as pure heresy by the majority of Russian political elites?

Some practical recommendations are equally illustrative of the fact. For example, sharing their views on resolving the Iraqi issue—possibly the most severe problem of modern world politics, the Survey's authors write: "*In the work with international partners, advance the Russian approaches to a political settlement of the Iraq problem. [...] demonopolization would give a realistic alternative to the present dead-end situation [...] The ideas of setting up a Contact Group made up of the United Nations Security Council permanent members, all of Iraq's neighbors and a number of key regional powers and of holding in this composition an international conference on Iraq with the participation of leading Iraqi politicians appear to be productive."*[8] The only reasonable observation in this recommendation is probably the one that the situation in Iraq is indeed a deadlock. The suggestion for establishing a Contact Group and holding an international conference on the issue of Iraq resembles a grim Soviet joke: *if we do not gather the harvest, we gather a plenary session*. The Soviet Union saw many such *plenums*, whereas the harvests were not as cheery. Indeed, the entire experience of international politics attests that conferences can only confirm a decision reached during lengthy negotiations. And if no such decision has been achieved, then the conferences, contact groups, and other multilateral diplomatic institutions become nothing other than forums for mutual accusations and squabbles.

Yet the key question is whether the militant rhetoric of Russian diplomats and military officials implies the start of active changes in Russian foreign policy. In this light, a truly significant issue is not so much the possible, even though unlikely, withdrawal of Russia from the INF Treaty, but rather the upcoming vote on the Kosovo issue in the UN Security Council. In the meantime, the Security Council, after admitting the Ahtisaari proposal[9] to examination, wisely decided not to rush and instead to send a delegation to Kosovo and Serbia. The logic of this decision most likely lies in a desire to reach a certain compromise, acceptable both for Belgrade and Pristina, which to put pressure on Serbia and Kosovo would rely first and foremost on economic mechanisms. In return, Russia is facing a tough choice: it can either offer assistance in resolving the Kosovo issue, or try playing upon the conflict between the Serbs and Kosovars. Choosing the latter option could be quite dangerous for Russia, as the Kosovo issue is too important to Europe for Russia to try manipulating it. It would be unwise to ignore the distressing memory of the Soviet Union losing the Cold War and breaking up at a time when it was much more powerful, both economically and militarily, than today's Russia, which is rapidly turning into a petrostate.

BISMARCK WAS RIGHT

Global political developments in the fall and winter of 2006-07 confirmed yet again that Judeo-Christian civilization is facing a number of existential challenges. They include a rising tide of Islamic fundamentalism, a proliferation of weapons of mass destruction, an erosion of identity, the imminent depletion of hydrocarbon energy resources, and potentially many others. The civilized world cannot respond to these challenges as long as it remains disunited and weak. Today, as throughout human history, the attributes of power are not limited to force; the power of example and conviction, the art of appealing to common sense and the skill to reach compromises, is equally critical. Such "soft power" is effective given a civilization with key values that include an individual's identity, rights, and dignity. But those who remain outside of this civilization admit no power other than the power of arms. That is why Prince Otto Eduard Leopold von Bismarck—who believed that it is not by speeches and majority votes that the great questions will be decided, but by blood and iron—was probably right.

Yury Fedorov

A VIEW BY A *RUSSIAN CONSERVATIVE*: A PREMONITION OF GLOBAL CHANGE

In the last survey I wrote about a change of historical eras. But history does not exist without economics and technology. And, in the final analysis, global security is a reflection of the sum of the current state of world policy, economics, and the level of development of modern technologies.

During the past few months, which are the subject of my survey, we have been given a lot of reasons to be convinced of this fact. After all, most of the events in global politics and global security have occurred at the intersection of politics, economics, and technology. It is unfortunate that all of the talk in recent years of a "clash of civilizations," while recognizing a shift in historical eras, fatally fails to remember that economic models and technological platforms are changing as well. And they are what determines the concrete policy measures that states follow.

CATCHING THE TECHNOLOGICAL CHANGES OF AN ERA

Like historical eras, economic models and technological platforms come and go. But they change much more frequently with the advent of new breakthrough technologies, the change of commercial methods and transport corridors, and the movement of centers of production throughout the world. The replacement of economic models is often less noticeable to the average person and less meaningful, but it can lead to the rise and fall of states. It is those states that catch the change of economic eras and incorporate nascent economic processes that become great.

Great Britain caught the change from a sailing fleet to steamships—a seemingly simple technological innovation, but one that consolidated the British Empire's global hegemony, on which "the sun never set," for at least a century. Similarly, the United States realized in time the dead end and obsolescence of heavy industry, and boldly stepped into the post-industrial computer world. And in many respects it won the Cold War thanks to this. Further, it based the concept of ground-based air operations on the new technological platforms and used them for new weapons of destruction, which the Soviet Union, with its armadas of tanks, could not counteract.

Fundamental changes in the area of armaments and military technology can only occur on the basis of new technological solutions and through them into new methods to defend the political and economic interests of states, radically changing the structure and very essence of

these interests every once in awhile. It was on the basis of steam and the fleet of steamships, the result of a technological revolution, that the historical era of industrial colonialism, which the *notable Russian political scientist* Vladimir Ulyanov, also known as Lenin, later called the "era of imperialism," arose.

Russia has almost never managed to catch the change of economic eras. The Russian Empire was late to grasp the steam era and shamefully lost the Crimean War, which it should have won if judging by the correlation of forces and "geopolitical" aspects, as is the current fashion. In the thrill of "detente" and "building socialism," the Soviet Union missed the beginning of the era of energy-saving technologies. And after falling asleep with the price of the oil at $35, it awoke with it at $14 to well-known consequences in the form of a systemic crisis.

A first impression: 2007 does not promise a fundamental realignment of the prevailing international trends, a premise confirmed by the new spark of interest in the subject of energy stability, in which Russia has again involved itself. This is understandable: one of the foundations of the current economic model is energy, based on the technological platform involving gas, which replaced coal some time in the first half of the 1980s, having provoked a drop in the price of oil, the acceleration of integration processes in the European Union, the Norwegian economic miracle, and the destruction of the Soviet Union.

But here is the question: don't many recent events testify to the fact that the time is coming when this technological platform too will recede into the background? And isn't it the expectation that this will occur and, further, the attempt to adjust to the new trends that is the cause of many of the events of the past four months? After all, the main idea of late is not only the sad statement that the economy of industrially developed countries will hardly be able to function without Russian gas. It is also the fact that under the present technological paradigm based on energy—with Russian gas or without it—it will be impossible to maintain acceptable rates of global economic growth.

Thus the past few months have been interesting precisely because, through the shroud of diplomatic initiatives and political maneuvers, as well as newly announced military programs—of which there were a strangely large number in the past few months—signs have begun to appear that indicate that a shift in economic models is coming, along with the appearance of new technological platforms.

NATO AND MISSILE DEFENSE: THE REBIRTH OF ATLANTICISM

One of the main themes of late has been the beginning of practical actions to move NATO infrastructure eastwards. This has overturned numerous forecasts that NATO is about to be transformed into a political alliance and its military infrastructure an auxiliary element. NATO arose as a military alliance and will continue to exist in that form. And in order for the alliance to continue to be a significant global force, in must continually undergo some sort of military *process*. In the second half of the 1990s, this process was the realization of operations outside of traditional areas of responsibility. Today the process that is functionally uniting—although they remain politically disconnected—the NATO states is the stationing of elements of the missile defense system.

However, what did the situation around the stationing of U.S. and NATO missile defense elements in eastern Europe show us about the political sphere? In principle, we did not learn anything new: just that that which our foreign policy liberals stubbornly did not want to take note of became so obvious that they could only shamefully turn away their eyes. The United States indicated long ago that it planned to put missile defense elements in eastern Europe. Its entire line of reasoning was well known, and it is not clear what those in Russia who are now so worked up had been counting on.

That some sort of Russian "spirit of partnership" would make the United States give up its strategic plans? But this spirit has been missing for a long time already; indeed, the U.S.-Russian partnership was actually never so significant and, most importantly, it had far too narrow an economic base to make the United States turn away from a major geopolitical project.

That European capitals would value future relations with Moscow? But the United States is not placing the missile defense elements in Germany, which really understands the importance of relations with Russia, nor will it do so in France, or even in Italy. It will do this on the territory of eastern European allies that are playing what is already an open role as a *Trojan horse,* under the framework of joint organizations. These states are not just agreeing to missile defense elements. They are ready to give their territory for torture and execution rooms. What do we expect from them?

The issue is even deeper: essentially, under the name of a "missile defense system for a European theater defense" one of the largest and geopolitically significant projects of U.S. foreign policy of the past ten, if not 15, years is being realized. The United States is beautifully and convincingly drawing its European allies into a costly enterprise of unclear—to the European alliance partners first and foremost—geopolitical value.

Evgeny **Satanovsky (Russia)**, President of the Institute for Middle East Studies – by phone from **Moscow**: *The permanent aggravating factors are the situations in Iran, Northern Africa, and the states of the Horn of Africa. I also foresee that the Iranian problem may be solved with the use of force, because Tehran has not implemented the demands of the UNSC resolution adopted in March 2007. The prevention of the Islamic presidency in Turkey would seem to be critical factor for international security in the near future. I hope that the army will stand for the secular character of the state, as happened before.*

Through this project the United States is introducing a real military element into the European security system—where some naively thought that they could get by without the sharp eye of Uncle Sam—which will be wholly managed, both politically and technologically, from Washington and Washington alone. They will tell the Europeans that the enemy, to whom they have already, since 1991, become unaccustomed, is "at the gates," and only the United States with its new missile defense technology can defend them. And at the same time they will show them that instead of aimlessly and senselessly "playing" at a "European Defense Identity" they should simply "come home" to NATO, to which they are already accustomed and which is, one must agree, completely effective.

In fact, to some extent a situation is arising that is typologically similar to the deployment of U.S. intermediate-range missiles in Europe in the 1980s, which as though in spite appeared in Europe just when a generation of politicians was coming to power that was in principal prepared to play at geopolitical independence. Of course, the Europeans did not like this; they went to demonstrations that, whatever was said there, were not always inspired in Moscow. However, the European elite understood that the alternative to hosting the missiles—regardless of the real level of the Soviet threat—was the loss of the important centralizing element of the North Atlantic alliance. And our European partners could not allow themselves this then or now. Moreover, the harsher Russia's "countermeasures" and the louder its rhetoric, the more tightly the timid Europeans will hold fast to their big overseas brother.

Most importantly, no one is afraid of a potential confrontation with Russia over missile defense. It is already understood that in the military sphere, Russia's industrial complex is only beginning to recover from a crisis, that in a competition with the United States and Europe it will lose, and that if the stationing of missile defense units in Europe leads to confrontation, this will be a competition between defense industries and military technology. So is it worth being drawn into? Maybe it would be more effective to get some control over the construction of the U.S. missile defense system in Europe and make it more transparent?

If one examines the situation closely, here too we find a case of the union of politics and technology against a background of economics. After all, the U.S. game which, I have to say, it played brilliantly, was first to push the threat of the proliferation of missile technologies to the level of an inevitable threat (this is where the grandiose foreign policy PR victory lay—in completely altering the *image of Russia*), and then to frighten both the Americans and the Europeans with the image of missiles arriving from who knows where. Then, on the basis of

new technology (and the new U.S. missile defense technology is probably going to represent a qualitative technological jump, whatever they write in the Russian military newspaper *Krasnaya Zvezda*), they will create a new mechanism for their presence in European politics.

This plan still lacks a new economic model but it seems that it is already clear what it will be based on: on reducing dependence on Russian energy through the development of energy-saving technology and nuclear power. It is noteworthy that even in Germany, the voices supporting the "peaceful atom" are stronger and stronger. So unless something unpleasant happens, a new system of transatlantic relations will be established that will be every bit as durable as the one that existed during the Cold War.

And from this point of view President Vladimir Putin's speech in Munich, so amicably criticized abroad, actually achieved its goal, if only because it provoked a discussion in European political and academic circles over where Europe is headed, geopolitically, and what the logic of the "captains" of European policy might be.

It is important to understand Moscow's reason for this address, and why the Russian president emphasized that he was speaking in the format of a "free exchange of opinions." The reason for the speech was extremely simple: there is little time left for Europe to either prove its geopolitical independence or confirm the fears that a geopolitically independent Europe did not succeed. If the former, then a dialogue on a wide range of issues, including security, is possible, but if the second, then it is pointless, as it would be far simpler and cheaper to arrange bilateral relations with the United States (either on the basis of deterrence or of a renewed partnership), and simultaneously develop our eastward-looking policy. Europe would become a subsidiary foreign policy area, without any particular strategic missions.

Maybe this speech came too late: it is hard to believe that there is anyone in the West today who would be prepared to take conciliatory steps towards Russia, and ideological inertia can play a significant role at times. Maybe it is time to get used to the idea that NATO and the European Union must be viewed without the illusions of the 1990s and the hopes of the early 21st century, but instead in terms of the forgotten paradigm of the 1970s and 1980s?

I would like to make note of one more important detail: for some reason we are not talking about a NATO missile defense or EU missile defense. We speak of a U.S. missile defense system that will cover European territory. And, even more interestingly, Washington is carrying out negotiations over the stationing of the missile defense system not with Brussels, but with individual states. This is, you must agree, quite suggestive, particularly against the background of the splendid festivities in honor of the 50th anniversary of the Treaty of Rome, from which the history of a United Europe began.

Thus, the story of U.S. missile defense in Europe causes us to think: of course, Europe has become a unified, humane space and basically a unified economy (which is, incidentally, vitally interested in Russia remaining within the framework of the current economic model and technological platform). But what about Europe as a geopolitical center of influence? And if Europe has not become—and I emphasize—a single geopolitical center of global significance, then the Russian concept of a "multipolar world" has a dangerous "hole" in it, and multipolarity will revert to bipolarity, where instead of the Soviet Union, China will figure as one of the two poles. This is a completely different picture and set of problems that Russian foreign policy would have to face.

U.S.-RUSSIAN RELATIONS: BALANCING ON THE EDGE OF A COLD WAR

The proclamation that U.S.-Russian relations are edging towards a crisis and that the arrival of a Democratic administration in the United States will lead to an even more unpleasant state of U.S.-Russian relations already seems to be becoming a platitude. Yet it is both true and not true.

It is not true in the sense that the most important problems that will face a new U.S. president—and it remains unclear that the next president will necessarily represent the Democratic Party—will be domestic, since he or she will inherit a split electorate with serious foreign poli-

cy problems and a growing number of inferiority complexes. And it is unlikely that a new U.S. president will take on the Russian problem *right away*.

It is true, in the sense that the new U.S. president will have to start revising U.S.-Russian relations and what is left of the "U.S.-Russian partnership."

In judging everything that has happened recently in U.S.-Russian relations, we should understand that there is a significant difference between the announcements of some sort of "Freedom House," that exists in order to pressure U.S. competitors, and military planning, which has far more significant consequences. For example, take the principles guiding the stationing of military forces and weapons procurement strategy. So far the United States is balancing on the edge of beginning military planning in expectation of a conflict with Russia, but it has not yet crossed this line.

But facts are facts: a fundamental review of relations with Russia has begun, and the real difference is that to date there is more about rhetoric and image in this "review" than, for instance, the appointment of a significant figure like Robert Gates to be U.S. Secretary of Defense, a patented admirer of our country. However, the actual system of relations based on political constraint, if Washington really does make some cardinal decisions, will be drawn up with more consistency and exactitude.

But we must understand that the U.S. armed force's large-scale military equipment renewal program was practically inevitable for domestic economic reasons: the defense enterprises have been investing large sums in the development of new types of weapons and simply must capitalize on these investments, and this is only possible through industrial production and large-scale purchases of these new weapon types.

Indeed, this process has already begun, as we can see from the transition from "trial" to full-scale purchases of the F-22 *Raptor*, a next-generation fighter plane that is expensive and not particularly necessary from the military point of view. And we should not feed any illusions: the U.S. defense industry has accumulated sufficient capacity to bring the U.S. military machine to a level practically unattainable in the foreseeable future either for Russia or for any other country. And a Democratic President, if history is anything to go by, will be even more inclined to begin military modernization than a Republican, since historically the U.S. Democratic Party is more closely connected to lobbyists for the machining industry, particularly of plants in the military-industrial complex, which, to be honest, were driven off during the era of the Texas oil men.

In the political arena, the worsening of U.S.-Russian relations, which in the past three or four months has gone from the plane of rhetoric to the plane of political actions, has its own logic, which flows from two basic features.

On the one hand, there is the United States' unwillingness to accept a strong Russia with a right to its "sphere of influence." After all, it is not entirely true that the United States does not assume that Russia has its own interests. Already at the end of the 20th century, the United States recognized the inevitability of the appearance of Russian interests that might contradict U.S. interests. What they never recognized was that Russia has a right to its own "sphere of influence," particularly with regard to the states that were formerly part of the Soviet Union, Ukraine especially. Not without reason, the real ideologist of U.S. policy with respect to post-Soviet Russia, Zbigniew Brzezinski, emphasized that were Russia to control Ukraine, it would almost unavoidably become an empire that would inevitably challenge the United States in other regions as well.

On the other hand, bilateral difficulties also flow from the fact that Russia has not proven to the United States to date that it is a good partner. In other words, we have talked a lot about the possibility of some kind of strategic understanding with the United States, but have done nothing practical that would prove to the Americans that it is better to negotiate with Russia than to contain it, to say nothing of confronting it. We have forgotten that the Americans are a practical people, who, as the poet Vladimir Mayakovsky once said, have an "average belief" in theory: dozens of statements that we have a weapon capable of defeating missile defense will not

convince them as much as one successful test, particularly since in the past few years Russia has heavily exaggerated its foreign policy propaganda and virtual projects.

In the final analysis, one must remember that a "sphere of influence" does not appear "by mutual agreement;" spheres of influence are not handed out. A sphere of influence is taken without asking. As a rule, by force; sometimes, by craft; only then do the diplomats get their turn, worrying about how most elegantly to formalize the facts on the ground. So from the beginning, hoping that the United States would give Russia the chance to influence the post-Soviet space, based only on the fact that the country's economic capacity is starting to approach top Soviet levels, was utterly naive.

Where the future of U.S.-Russian relations is concerned, there is no need to go to extremes. One should attempt to preserve the existing coordination mechanisms, as they could be needed after some time has elapsed. Of course, that is if Russia is able to finish traversing the "period of political transition" without considerable political losses. The entire recent history of relations with the West proves the well-known fact that despite all of the talk about a multipolar world, the only partner with whom one can actually discuss anything in the Western world is the United States. Yes, it's a difficult partner, with whom our relations will probably deteriorate over the course of the next few years. But it is with this very partner that real problems can be solved and we can ensure our country a worthy place in the foreign policy arena. And we have to preserve the foundations upon which, later, when the dust has settled (in about five years), new U.S.-Russian relations could be built. Whether we like it or not, arms control is just such a foundation.

Incidentally, if we consider the U.S. missile defense system, then the idea, if we skip the hysterics, of obtaining access and monitoring over U.S. facilities, and perhaps agreeing to the siting of some of them in our territory, does not seem so foolish. Although, of course, the idea of a U.S. military facility on Russian territory initially seems preposterous. But if, instead of fighting the inevitable, we think about how we can get the maximum political and economic benefits, then it makes sense. And in the final analysis, however this proposal of cooperation with the United States looks to Russia and the entire civilized world, the United States has no other goals in the development of a missile defense system in Europe other than the fight for global stability against maniacs with intermediate-range missiles.

Or does it?

CHINA ENTERS THE RACE FOR MILITARY TECHNOLOGY

Strictly speaking, the whole story of the interception of a satellite by a Chinese rocket does not have any direct military significance—in order for such significance to arise, China would have to create a group of several dozen such rockets with a shortened preparatory period. The point is that Beijing's demonstration was meant to show everyone, the United States first and foremost, that it has the ability to overcome a real technological gap in the area of strategic weapons. This gap is one of those factors that has allowed Washington, thus far, to feel relatively comfortable in its relations with the "heavenly kingdom," in spite of numerous, lengthy conversations about the coming U.S.-Chinese conflict.

This does not at all mean that the PRC is ready for a full-scale arms race. The Chinese economy is based on an industrial model that has already disappeared into history. And the technological platforms upon which this economic model is based—in transport, in energy, and in metallurgy, i.e. the main industrial branches—all use old technologies. Chinese attempts to overcome this technological lag behind the United States in the weapons sphere have to date had only limited results, although one cannot but recognize the progress Beijing has made.

We can no longer consider the Chinese army as a collection of numerous, but very low quality, tanks and aircraft that are two generations behind those of developed countries. Beijing's actions indicate its readiness to invest significant resources in high-technology weapons. How far Beijing will succeed in this is a big question that will only be answered over the course of time. However, if our Chinese partners have decided to scare Washington via "virtual reality," then a big disappointment awaits them, and soon. To a virtual arms race initiated by our

Chinese partners, our American partners have an excellent answer: pressuring Beijing through the deep dependence of the Chinese economy on access to the U.S. market, together with the backwardness of its infrastructure. This will continue to be a decisive factor in Chinese geopolitical development, despite all of Beijing's efforts to diversify its economic relationships and forcibly attain a new technological level in the main industrial branches (particularly noticeable in China's efforts in the sphere of nuclear energy). And it is through this very "Achilles heel" that they will beat the United States.

Another problem is that if China and the United States actually begin a technological arms race, Russia may be dragged into serious global troubles "through the back door." After all, it is obvious that Russia's role in its "strategic partnership" with the PRC is to take on the major part of the effort to improve Chinese weapons technology. And it is not certain that the political and economic compensation offered by China for the negative political consequences Russia will incur (and only a child would doubt that there will be such consequences) will be enough to make up for the losses we suffer. Thus, moving further along the path of partnership with our great Eastern neighbor, we should nevertheless periodically ask ourselves: should we put on the brakes?

THE NORTH KOREAN NUCLEAR PROGRAM: CAPITALIZING ON STATUS

As we predicted, after its tough statement about its views, new status, and claims, as usual formulated in a "maximalist" manner, Pyongyang has gradually begun to soften its position, probing the possible depth of concessions it may obtain from the global community.

Cynicism about the situation is not caused by the fact that, in agreeing to Pyongyang's demands for economic compensation in exchange for allegedly shutting down its nuclear program, the mediators are basically agreeing to the principle of nuclear blackmail. And not even by the fact that hardly any of the mediators believe in earnest that the North Korean leadership will allow the true, verified dismantlement of the nuclear program. Instead, it is due to the fact that the universality of the Nuclear Non-Proliferation Treaty (NPT) is being still further destroyed. It turns out that some states (India and Israel) are not allowed to possess nuclear weapons, but can actually have them. But certain others (Iran) are not allowed to and cannot have these weapons under any conditions. While still others have to be paid for giving up their nuclear programs. Moreover, with heavy fuel to date, but just wait and it will be money, especially since the model of squeezing economic concessions out of the global community worked out by Pyongyang is completely effective. An indicator of this is that the very fact that when Pyongyang agreed to the resumption of negotiations it caused badly hidden enthusiasm. And the departure of the North Korean delegation from the negotiations on the paltry grounds of the freezing of accounts in a Macao bank led to badly hidden hysterics.

The unfortunate thing is that in agreeing to end the situation by providing goods, the world community is actually contributing to the preservation of the North Korean regime, rejecting the most minimum requirements for the democratization of society and change of the economic model governing North Korean society. That is, from everything that led to the crisis surrounding North Korea's nuclear program in 1993. No one is talking about this any longer, and I fear that they are not even thinking about it either. It is absolutely senseless to ask who won, and to dispute the viability of the idea of *juche*.

THE MIDDLE EAST: TACTICAL MANEUVERS AGAINST A BACKGROUND OF STRATEGIC WORTHLESSNESS

Despite all of the feverish activity in the Middle East, where in the past four months there have been visits by presidents, secretaries of state, ministers, and mediators, the major issue of Middle Eastern policy—the absence of partners capable of negotiating—has not been resolved. Moreover, recently this problem has been aggravated to the extreme and today it is almost impossible in the entire Middle East to find a political figure, even one who is head of state, who can made general, long-term promises. The only exception, perhaps, is King

Alexander **Saveliev (Russia)**, Head of the Strategic Studies Department, Center for International Security, Institute of World Economics and International Relations (IMEMO) – by phone from **Moscow**: *The future deployment of the elements of an American missile defense system in Eastern Europe most of all has influenced negatively the situation on the European continent. At the same time, where the Iranian issue is concerned I see that a military option will not be chosen. Over all I would describe the international security situation as in a state of only temporary stability: this year we are waiting for some changes, given the future changes in the Russian and U.S. governments.*

Abdullah of Jordan; however, with due respect, Jordan is not a major player in the Middle East peace process. All of the other political actors in the region are either in extremely precarious political positions, depending on the domestic political situation (Ehud Olmert or his Lebanese colleague Fuad Seniora), or their influence is on the decline (Hosni Mubarak or the Saudi royal family). Given this situation, the concentration of the main forces in the region on internal maneuvering is quite natural. These can take a variety of different forms: from the corruption and sex scandals in Israel, to the armed conflict in the Palestinian Authority. As they say, "according to the specific character of the region."

Of course, one is justified in noting that the events in the Palestinian Authority were in many respects provoked by Israeli special services, incited by releasing certain Palestinians with others. This is undoubtedly the way things will be, and the Israeli special services are to be congratulated—despite all of the costs, they adequately protected the interests of their country—for carrying out their operation well, providing some time to the country's political leadership to put its house in order. In the two or three months that Israeli special services gave their politicians, one could actually have done a lot. However, I fear that this period of time—and together with it the life of the Palestinians killed in internecine strife—was spent in vain.

But the situation in the Palestinian Authority and Israel are just one part of the whole picture, although an exceptionally important one. Basically, the Middle East has been seized by a single disease: domestic political instability and growing factionalism. No real strategy or long-term policy can successfully be built in the region. If we look at U.S. actions in recent months, then it is obvious that they are not even trying to do this; in spite of optimistic statements, the U.S. administration has taken on no long-term commitments to its allies in the region. This is evidence of the fact that the United States is not pursuing any long-term positive goals in the Middle East, but mainly looking to solve short-term political problems.

Since the United States understands that until the idea of forming an effective collective security system matures in the region (and this will not occur in the foreseeable future, a fact absolutely clear to all concerned), the only thing one can do is to keep the confrontation under control.

From this point of view Russia, too, should probably worry less about the idea of a "return" to the Middle East. First, let us ask ourselves: to what Middle East is Russia returning? After all, in the 1950s, when the Soviet Union was first interested in this region (by the way, Josef Stalin was always skeptical about the possibility of having serious influence there), the Middle East was seething, recently freed from the domination of the traditional Great Powers, while the oil economy was only just beginning to become a geopolitical factor. But the key is that at that time there were significant actors in the Middle East, who came *in earnest and for a long time*. Now none of this is true, and the most important thing—and here we should recognize the wisdom of the Americans—is that there are no actors with whom to build long-term relationships.

Secondly, another critical question that must be answered is: why should Russia return to the Middle East? For the Soviet Union the answer was predictable, transparent, and understandable. In the mid-1950s the Soviet Union was entering the arena of truly global confrontation with the United States and the West as a whole, and the Middle East as an arena of confrontation was exceptionally attractive. But what will Russia gain from a *return* to this region, where

the main actors are notorious non-state actors with whom one cannot negotiate through visits, political declarations, and intergovernmental agreements? And most importantly, you have to negotiate with them *outside of the Middle East*.

Of course, let's say six or seven years ago one could negotiate with the Saudi royal family about its refusing to support various types of radical Islamic movements in Russia and some CIS countries. Now this is already almost pointless, since the Saudis have lost control of the monster, which they themselves fostered in many respects. And an understanding with them will no longer be of decisive importance, unlike in the recent past.

Thus the most that we can expect in returning to the Middle East is to solve some tactical missions through out relations with Middle Eastern elites. The important thing is to ensure that the balance of the costs of our Middle East policy and the geopolitical "profits" from it are nevertheless in our favor. And here we must be especially careful.

For example, there is an outwardly very beautiful proposal about the creation of a gas OPEC together with several Arab countries and Iran. It goes without saying that Russia, as one of the initiators of this organization, could obtain significant influence over the formation of the world market for natural gas. However, one should not forget that after joining this organization, Russia will lose a considerable amount of independence both in its pricing policy and in questions of its entry into new markets (for example, selling Russian gas on the Israeli market would become problematic), and on a number of other very significant questions. Most importantly, there is absolutely no guarantee that the other founders of the "gas cartel" will not attempt to use gas as a weapon for purely political purposes at times, and that these purposes will correspond to our national interests. To say nothing of the fact that after becoming the leader of a gas OPEC and after beginning to speak on behalf of the organization of gas producers, Russia will have associated itself with countries that can hardly be considered industrially developed. That is, it will have chosen a very peculiar place for itself—*a peer among strangers, a stranger among its peers*—in the new opposition between the industrially developed in the post-industrial world and the pre-industrial resource economies. Thus, the balance between plusses and minuses is quite complex and ambiguous.

THE UNITED STATES ON THE WAY OUT OF IRAQ

Certainly, one cannot ignore the situation in Iraq and the consequences of the execution of Saddam Hussein. To be honest, I do not feel sorry for Saddam Hussein. He himself played for keeps with the Americans, when he could, at a minimum, have ended the conflict in a draw. He himself created the Iraqi leadership, his entourage that betrayed him at the first opportunity. He himself created the situation whereby Iraqi statehood was essentially held together by force. There are situations where one should not play, not bargain for concessions, but stand to the death. Saddam, whatever the heroic colors some Russian politicians paint him with, was not just a dictator but a wretched, unlucky dictator. You can, of course, speak about the inhumanity of capital punishment as such, but if we look at the situation from the point of view of judicial logic, i.e., from the point of view of the correspondence of the sentence to Iraqi laws, then there should be no claims against the Iraqi authorities vis-à-vis the execution of Saddam Hussein.

But there are several oddities that do not leave us in peace. First, I cannot believe that the execution was carried out against the will of the Americans. Do you really believe that a collection of political nonentities, by the name of the "Iraqi government," whose very survival depends on whether U.S. command will provide a pair of tanks to escort their limousines when they drive around the guarded "green zone," will risk contradicting their masters? In the second place, the execution itself seems a bit strange: the hangmen do not just insult Hussein; on top of that they scream a toast to the well-known radical Shi'ite leader Muktada al-Sadr directly into a camera. Who is not, putting it mildly, just a figure cherished by the "Iraqi leadership" (even taking into account his recent conciliatory statements), but is considered to be one of the most dangerous U.S. enemies in the region—the weakly al-Qa'ida in Iraq cannot be compared to him. But the most important thing to consider is: what was the result of the execution of Hussein? Yes, it was completely predictable: Sunni fighters, the remaining Ba'athists, and

even al-Qa'ida members, lacking anything better, proclaimed Saddam a martyr (what an ironic fate for the man, who spent half of his life crushing the Islamic underground in Iraq!), undertook this in a completely logical matter: killing Shi'a, while temporarily reducing their attacks on the Americans and their scattering allies. Since it is the Shi'as who would clearly become the obvious culprits in the loss of the latter-day martyr. Certainly, only history will tell us who, how, and why Saddam Hussein was executed, but even now it is possible with confidence to say that the United States—or in any case, its current leadership—has a scenario for exiting the Iraqi conflict. This scenario is simple, doable, and professionally cynical: cutting Iraq up along ethnic lines. As Gilbert K. Chesterton once wrote, in order to hide a dry leaf, one must plant a dead forest.

This scenario, it must be said, is interesting and, most importantly, completely feasible. The only question is how Washington will manage to succeed in combining three seemingly impossible tasks: the controlled disintegration of Iraq followed by a strategically significant conflict between Shi'as and Sunnis, the retention of at least the appearance of stability in Saudi Arabia and the oil kingdoms of the Persian Gulf, and bringing down the price of oil, which would knock the foundation out from under any anti-American coalition.

THE IRANIAN "CAULDRON"

If we reject all of the talk about a clash of civilizations and the age-old contradictions between the Christian and Muslim worlds, then the problem is that Iran is turning into a military and political hegemon in a strategically important region for the functioning of the global economy—though I would like to emphasize once more that to date it is still using a traditional technological platform to achieve this: energy, i.e. oil and gas. In the final analysis, Iran's ambition to develop its own nuclear program and get access to the critical technology of uranium enrichment reflects an understanding that in the contemporary world a state's status and its options for "bargaining" with world powers is determined by a certain set of technologies.

Indeed, possessing a developed civilian nuclear program, especially if one has the technological capabilities rapidly to transform it into a military one (and Iran probably does have these capabilities), one can more shrewdly and effectively bargain with the Great Powers for the status of regional hegemon.

Only one should not forget that this process had already begun in the early 1970s, when Shah Reza Pahlevi held court in Tehran, a friend of the United States (who also, incidentally, had fairly good relations with Moscow too), and if anyone was thinking about an Islamic revolution, then it was only a few "hawkish" analysts at the CIA. At the time, neither a strengthening Iran nor plans to construct a couple of dozen nuclear power plants caused any worry. Today is different: given the nature of the current political authority in Tehran, the country's transformation into a regional hegemon will take place under the flag of a radical Islamic ideology, which could overturn the oil kingdoms of the Persian Gulf (states that are essentially based on petrodollars alone) and Saudi Arabia. And even secular Arab regimes will become very uncomfortable. Therefore, the idea of containing Iran, among other things, through the use of military force is not simply urgent, but completely reasonable from the point of view of protecting U.S. interests in this critical oil-producing region.

There are two fundamental political questions concerning the Iranian situation that are relevant here. And they are not tied to the Iranian nuclear program, which is a consequence, a by-product, but not the reason for the political processes in the region.

For the first question: several years ago, there was a lot of talk in academic and political circles, as well as in the media, about the fact that Iranian *neoshi'ism* was beginning to lose its radicalism and a moderate mood was getting the upper hand in Iranian society. One should recognize that these ideas were not without some foundation: the entire presidency of Mohammad Khatami was ruled under the banner of the liberalization of the Iranian regime, and there were various "signs" that Western countries, including the United States, might be ready to normalize relations and find some way of coexisting. It turns out that either the evaluations of the "burn-out" of Islamic radicalism in Iran were incorrect, or the appearance of Mahmoud

Ahmadinejad as the president of Iran is just an annoying tactical disturbance that the Iranian elite will correct in one way or another. The course of events in the nearest future will provide the answer to this important question.

As to the second question: the zigzags of U.S. policy with regards to Iran—from flirtation to direct confrontation—clearly do not correspond to the development of the country's nuclear program so much as they do to the degree to which ideology directs Iranian foreign policy. Doesn't this indicate that the U.S. priority in the region is not the nonproliferation of nuclear technologies (which were also being developed under President Khatami, a liberal, and President Ahmadinejad just began to "skim off a little propagandistic cream" from the achievements of Iranian, and apparently not only Iranian, nuclear physicists), but Iran's ability to lay claim to the ideological leadership of the Islamic world? One can assume that the United States is proceeding from the idea that a battle of ideologies will become one of the important factors of global development in the very near future. In other words, the United States is treating Iran so severely because it is predicting that there will soon be a sharp rise of Islamism throughout the world, which will be even more dangerous for the United States than the appearance of the al-Qa'ida phantom. And if this rise is be accompanied by a nuclear program, which could, in the foreseeable future, lead to nuclear weapons, then the situation will indeed be hopeless.

For Russia, the Iranian situation should be a very serious lesson. It is a lesson indicating the need for an integrated approach to relations with other countries. We should dismiss the talk saying that the Bushehr NPP had to be built to spite the United States; in today's world the construction of NPPs (in contrast to any another industrial, energy, or even military facility) means committing to a particular bilateral relationship. In this relationship, the state constructing the NPP is obliged to ensure the acceptability of the purchasing state's international behavior on behalf of the world community. But this type of obligation can only be undertaken if there is a stable political and economic relationship between the partner states, within the framework of which the NPP is just one element, and by no means a decisive one. However, Russia has never had this degree of influence in Tehran, while Tehran's domestic and foreign policy have never been transparent enough for Russia to undertake such significant foreign policy obligations with respect to the medium-term, to say nothing of the long-term, future of the Iranian nuclear program.

The problem in Russian-Iranian relations is precisely the fact that at some point in time completion of the Bushehr NPP became the main element in these relations. And the Iranians' nearly unconcealed goal became obtaining fuel assemblies for the operation of the plant as quickly as possible. At the same time, Russia proved to have very few practical—economic, mostly—measures it could use in order to show the Iranians the inexpediency of aggravating the situation further. There is not one really major Russian-Iranian economic project that can be named at present. In the political sphere, we are also far from a strategic partnership. Under these circumstances, Iran, the European countries, and, of course, our American partners are all very tempted to use relations with Russia and this major, but nevertheless single, project, as a bargaining chip in more complex political combinations.

But on the other hand, the situation around the Iranian nuclear program is clear evidence of the importance of individuals in contemporary history. Here I am not talking about the fact that the U.S. president periodically speaks to God and the president of Iran considers the Holocaust a Zionist fabrication. The point here is different: it is already utterly obvious that the Iranian president and his entourage are consciously going about the aggravation of relations with the West, the most explicit evidence being the seizure of British marines near the mouth of the Shat al-Arab river. Ignoring the question of whose territory the Britons were found on, you come to the question: why did the Iranian leadership undertake this clearly scandalous, but strategically unnecessary, action? Tehran must have understood that the West's reaction would be severe and that this would only bring the beginning of military operations closer. The insignificant propaganda points Iran obtained by letting the Britons go mean little in the situation that is arising.

About military operations: preparations for a military solution are producing a stranger and stranger impression. The almost total transparency of the plans is striking. There are discussions in the media about what will be bombed, how they will bomb, what actions Iran may take

in answer, and what the end points may be. This can be explained by the realization of the inevitability of the clash and the limited number of possible scenarios. Everyone understands that the use of force will be limited—the United States will probably limit itself to air strikes, as it simply does not have the troops for a ground operation. It is clear that the Iranian nuclear program will, of course, be slowed down, but not stopped. The question is to what extent it will be slowed down. A strategic operation generally seems pointless. It is clear that after this the radicalism of the Iranians will only grow, and it will become practically inevitable that they are drawn into the Iraqi conflict. But then the question arises: why are both sides so persistently driving the situation to the verge of military conflict?

I think that in the behavior of both sides one finds a combination of domestic and foreign policy motives, with domestic policy factors primary. For the Iranian leader, a confrontation with the United States, even if Iran is hit by air strikes, will bring the majority of Iranian society, including the young people, to his side. But most importantly, it will make it possible to "sweep away" the rising members of the opposition, who otherwise may use the economic difficulties, which will inevitably arise thanks to the increasing isolation of the country, as an excuse to get rid of the radical president. Thus, President Ahmadinejad is not afraid of a confrontation with the United States; on the contrary, he is doing everything he can to ensure that a clash with the West happens as soon as possible, while he still has significant political strength.

The United States, for its part, expects that a limited military strike against Iran followed by a long-term economic blockade will force opposition groups to act more decisively. On the other hand, is clear that for George Bush a confrontation with Iran is not simply one of the elements in a global effort to deter radical Islam, but also a means to put into practice his own model for the development of the Middle East, which the next U.S. president, whoever he or she may be, will be forced to follow. After all, if the idea of stimulating the replacement of the radical president fails, Iran will unavoidably launch a retaliatory strike against the United States in the most predictable place: Iraq. Despite the inevitable losses that would occur in this case, the Americans and President Bush personally will nevertheless be able to solve several important tasks.

On the one hand, the question of the expediency of retaining U.S. troops in Iraq automatically will be removed, and Bush's whole Middle Eastern strategy will be seen as "correct." At the very least, no Democratic majority will be able to question keeping U.S. troops in the region and funding them. No one wants to be labeled a "traitor," especially in an election year. On the other hand, Iran will find itself in a state of nearly total international political isolation, and even former allies, who previously clenched their teeth and endured even the anti-Semitic tirades of the Iranian president, will be forced to turn away.

As a result, a coalition of Arab countries is arising in the Persian Gulf that will not just help the United States contain Iran. Containing Iran, of course, is complicated, but given the export-dependent nature of the Iranian economy and its deep infrastructure problems, as well as the cleavages within the Iranian elite, it is possible. Furthermore, the U.S. operations to contain the Iranians will not be paid for by U.S. taxpayers, but by the oil-producing countries for which the U.S. military will be the only survival guarantee.

Here we must ask the question straight out: what is Russia doing here?

IF YOU TAKE OUT A KNIFE, USE IT!

Russian-Georgian relations are arguably the most painful and unpleasant part of all of Russian foreign policy. This is not just because Russia keeps losing the information war to Tbilisi at every turn. And it's not because Mikheil Saakashvilli is behaving more and more "unfettered," since he feels the United States is supporting him. The problem is that Russia's Georgia policy is more about tactics, even more about PR actions, but there is almost no strategy.

The other problem with our Georgia policy is that we have forgotten that global politics is based on the simple rule of the street (whatever that street may be: Sretensky in Moscow, Ligovsky in St. Petersburg, or in Brooklyn in New York City): "If you take out a knife, strike!" But if you do not have the desire or the will to use it, then keep your knife in your pocket. In the Georgia sit-

uation, we took out a knife and then reconsidered using it. We are the ones who had to take steps backwards while Georgia's leaders, in rays of glory, received congratulations from Western admirers in the United States and the European Union. This should be a significant lesson for us: each PR action has its beginning and its end. The beginning of our most recent PR action with Georgia was, let's say it straight, impressive, but the ending was a failure. That's why our ambassador to Tbilisi had to come home and urgently go to the Prodexpo exhibition in Moscow to give Georgian wines a medal "for high quality." In other words, we had to admit that the attempt to frighten the Georgian leadership had fallen through. We should go still further and recognize that we basically should not frighten the Georgian leadership.

In the end, the events of the recent three-four months have once again proved this with frightening frankness: Russia must clearly decide what it wants from Georgia. If we wants Georgia to have a relationship with us that we finds acceptable, then we have to understand that both the Georgian leadership and Georgian society have chosen in favor of the United States and NATO, and are only irritated by any reminders of the "historical closeness" between our countries. But their anti-Russian rhetoric is really just a way for them to demonstrate maximum loyalty to their new patrons. And it's not our job to convince them that this choice was correct or not. It is significant, by the way, that even if there is a "pro-Russian party" in Georgia, it basically lives in Moscow. And the reason that attempts at economic pressure do not give the desired result is not just because Georgia is a comparatively small state that the United States and European Union can completely take care of, together with major international philanthropists. The fact is that small difficulties, especially if they concern the poorer members of the public, and not the well-off elite, are nothing in comparison to the colossal dividends that the choice in favor of the West promises. Russia really has almost no tools to put pressure on the Georgian elite, while sanctions essentially fall on the poor segments of the population.

We also must understand that, in principle, there is a way to achieve at least neutral relations with Georgia, but only if Russia "gives up" Southern Ossetia and Abkhazia and returns them to Georgia. The question then is: does this correspond to Russian interests? Maybe it would make more sense to acknowledge the fact that Georgia will, for the foreseeable future, be a state hostile to Russia, while at the same time Russia's status as a country that's a factor in the formation of the international system is confirmed. In other words, we should acknowledge the independence of self-proclaimed states.

Of course, in the short term this sort of step would lead our Western partners to become hysterical. But given the current level of the relations between Russia and the United States and Europe, do we need to fear this so much? There will not be an economic blockade of Russia, though to "cure" our country of the oil and gas "needle" this would not be bad, as fortunately we have a gigantic, though senseless, "stabilization fund." Political relations with the United States and the European Union are at such a low level that lower them still further would be extremely difficult, particularly given the second *Maydan* in the Ukraine and the inevitable repeat of the clash of interests between Russia and the West. But at the end of the day the United States and the European Union are unlikely to have a complete falling out with Moscow, given the maturing conflict in the Persian Gulf and the strategic vagueness on the Korean peninsula. In reality, the risks are not as great as it would appear.

On the other hand, the acknowledgement of the independence of self-proclaimed autonomous states would be a real foreign policy step that could be unexpected for our Western partners, who are used to Moscow just "sending signals" but almost never actually realizing its threats. Maybe then Russia's "final warnings" would be taken more seriously. And Saakashvili's supporters would immediately become far more responsible, since they would become convinced that Moscow's "frightening words" may sometimes be followed by concrete actions.

THE END OF THE ERA OF HYDROCARBONS

The new historical era of resource conflicts could also begin on the basis of old economic models and old technological platforms. Most likely, the first period of the new historical era will be developed with an outside force holding sway. For a while Russia will still be able to con-

tinue relatively comfortably. However, only the initial period will remain unchanged. All of the new global issues and challenges facing the leading world powers will force them to search for new economic models and new technological platforms, and then to adjust their foreign policy priorities to the new technological options (including those in the military sphere) and economic interests.

Gas, and in a broader sense, energy based on hydrocarbons, was one of the foundations of the economic model of the late 20th century. It made it possible for Russia to survive the difficult 1990s and to ensure itself a place on the European gas market, as well as to accumulate the resources to begin the new industrial jump, which for some reason has yet to occur. But it is naive to think that gas will eternally rule as the type of energy powering contemporary technological platforms and that Russia will be able to eternally use the gas factor to resolve foreign policy issues, particularly, to put it mildly, in a not too delicate way, as has been done in recent years.

A way out of the global energy impasse will be found, and the more Russia accentuates its importance and irreplaceability as a source of hydrocarbons, the fewer the chances that it will be able to participate in the formation of the new technological platform that will be the basis of a new economic model. And only by going over to a new economic model will Russia be able to realize those natural geopolitical advantages that will give it the new historical era, which we designated above as the era of resource conflict. This is the only way that Russia will be able to preserve the right to have an active role in global politics.

Of course, the end of hydrocarbons will not be as apocalyptic and sudden as some other Russian writers have described. Oil and gas will not cease to be needed for the functioning of the world economy all at once. No perpetual motion machine will appear. This is not the threat, and it is not even the fact that Russia's bottomless and senseless "stabilization fund" will unexpectedly end. The threat is that Russia will be late replacing its technological platform and economic model, and will be relegated to the periphery of the global economy, which will require a heavy price, including a domestic political price, to get out of, as happened in the 1930s.

By the way, if there are any who do not realize it, today's $56-60 per barrel of oil are even less than $35 dollars in 1984. That is, the year when the final sunset of the Soviet economy began, the geopolitical consequences of which are well known. So the margin of safety enjoyed by this energy superpower is not so very great.

Dmitry Evstafiev

NOTES

[1] The *iSi* Index is calculated according to the following formula:

Comprehensive Security Index = $\sum_i k_{G_i} \times factor + \sum_i k_{R_i} \times region + \sum_i k_{L_i} \times \Delta_j \times locality$

Where

k_{G_i} = coefficient "weight" of global factors;

k_{R_i} = coefficient "weight" of regional factors;

k_{L_i} = coefficient "weight" of local factors;

Δ_j = coefficient indicating the importance of an individual region.

The reader can learn more about the *iSi* methodology on the PIR Center website at: http://isi.pircenter.org.

[2] UN Security Council Resolution 1737 (2006), adopted at the UNSC 5612th session on December 23, 2006, <http://www.iaea.org/NewsCenter/Focus/laealran/unsc_res1737-2006.pdf>, last accessed June 26, 2007.

[3] Ibid.

[4] Ibid.

[5] Guy Dinmore, "US hawk judges 'war on terror' a mistake," *Financial Times*, November 24, 2006, p. 8.

[6] Ibid.

[7] Ibid.

[8] Ibid.

[9] Special Envoy of the Secretary-General of the United Nations for the future status of Kosovo Martti Ahtisaari suggests presenting the province with a number of governance attributes and providing it with limited sovereignty under international military and civilian control. His proposal does not mention either the region's independence or Serbia's claims of sovereignty over this territory. The proposal suggests giving Kosovo the right to independently establish diplomatic relations with other states, develop its own constitution, independent judicial system, etc. The plan also foresees the possibility of Kosovo signing international treaties and even joining international organizations.

Roland Timerbaev

ON THE "THRESHOLD" TEST BAN TREATIES OF 1974-76[1]

In 1974-76, U.S. and Soviet delegations held discussions in Moscow on the conclusion of so-called “threshold” treaties limiting the yield of underground nuclear explosions, conducted either for weapons testing or for peaceful purposes. I was a direct participant in these talks.

Until that time the multilateral 1963 Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space, and Underwater (known as the Limited Test Ban Treaty, or LTBT) had existed—it is in force to this day—a treaty that was also concluded in Moscow. But that agreement did not ban underground nuclear tests of any yield, and such testing continued to be conducted intensively not only by the United States and the Soviet Union, but also the United Kingdom, France, China, and later India and Pakistan as well.

Today, all of these countries, as is well known, observe a nuclear testing moratorium, but the Comprehensive Test Ban Treaty (CTBT), concluded in 1996, has yet to enter into force. It would therefore be useful for readers to know what treaty obligations exist with regards to the conduct of nuclear tests. Along with the 1963 LTBT, which continues to ban testing in three environments, there are two additional agreements limiting underground nuclear tests, concluded in 1974 and 1976, that continue to be legally in force to this day. How these treaties were formulated will be described in this section of the journal.

THE TREATY ON THE LIMITATION OF UNDERGROUND NUCLEAR WEAPONS TESTS

In past years there were high-yield underground nuclear tests that resulted several times in the release of radioactive materials into the atmosphere that crossed national boundaries, violating the 1963 treaty. On quite a few occasions, the United States and the Soviet Union filed serious claims against each other in this regard. According to data cited in the media, between 1969 and 1973 alone the United States detonated seven devices with a yield of over 150 kilotons.[2] During the same period, the Soviet Union, according to official data, undertook 18 nuclear tests with a yield of over 150 kilotons.[3]

However, by the beginning of the 1970s both the United States and the Soviet Union had essentially completed the development of their highest-yield nuclear warheads, including those for intercontinental ballistic missiles and sea-launched ballistic missiles with multiple, independently targetable re-entry vehicles (MIRVed ICBMs and SLBMs), and the need for extremely high-yield tests was greatly reduced. The idea of limiting the yield of underground explosions to below a certain threshold arose. Both parties needed this agreement for general political reasons as well: to strengthen and further develop the temporary détente between them.

U.S. President Nixon visited the Soviet Union in July 1974; both parties decided that a treaty limiting underground nuclear tests to a certain threshold should be worked out before his arrival. The exact threshold had yet to be determined, but was to be agreed during the per-

sonal summit between the countries' two leaders, Richard Nixon and Leonid Brezhnev. The two countries' delegations were charged with agreeing on a treaty text, leaving a place for the exact amount of the threshold.

The Soviet delegation was headed by Deputy Minister of Medium Machine-Building (Minsredmash) Igor Morokhov, a very energetic and dynamic individual, and included another deputy minister from the same agency who was in charge of the nuclear weapons complex—Aleksandr Zakharenkov—as well as General Aleksandr Osin from the Ministry of Defense and myself, representing the Foreign Ministry, as well as many specialists from a variety of organizations, including the head of the State Committee on Hydro- and Meteorology (Goskomgidromet), Yuriy Izrael. In a naive attempt to hide his actual role, Zakharenkov was introduced as a Kurchatov Institute professor, but he was seated next to the head of the delegation and it was clear to all that he held a very influential post. During the sessions, which took place in the Minsredmash building on Staromonetnyy Lane, Zakharenkov was fairly stern and observed the proceedings with some distrust, but in everyday life he was a very nice person; I got to know him and sometimes took walks with him together on Sundays as we lived in the same part of the city.

The U.S. delegation was headed by U.S. Ambassador to Moscow Walter Stoessel, an extraordinarily pleasant and kindly man. Something quickly drew us together, and I began to visit Spaso House, the residence of the U.S. ambassador, quite frequently. Soon afterwards, though after the conclusion of the threshold treaties, he fell seriously ill. He was transferred to become the ambassador to Bonn (West Germany) in order to be nearer to good doctors, but as it turned out, he had an incurable form of leukemia and it was impossible to save him.

The threshold test ban treaty was formulated fairly quickly (in about three weeks). The protocol to the treaty provided for the exchange of certain data on each party's test sites. The entire text was completed and printed on special "treaty" paper, but a place for the "threshold" was left empty, awaiting the decision of the two nations' leaders. Upon arriving in Moscow, Nixon and Brezhnev were fairly quick to agree to the permissible threshold yields and the treaty was then signed at a Kremlin ceremony.

As far as the threshold values are concerned, the relevant agencies (Minsredmash and the Ministry of Defense) pushed to obtain a level of permissible yields that would allow them to undertake tests and fairly powerful explosions. I no longer remember the precise numbers, but they were approximately as follows: one to two explosions with yields of over one megaton, three to four of 500 kilotons, and so on in descending order. But our first sessions with the U.S. delegation already indicated that they were not prepared to discuss concrete numbers, and it was also clear to us that so intricate a framework would require very complex and strict monitoring, to which we were not prepared to agree. Furthermore, it would have been politically difficult to justify to the international community a threshold allowing a one megaton test. Thus, those of us in the delegation decided to put off the question of permissible explosive yield until the meeting of the two powers' leaders.

It seemed to me that the issue would be resolved through an agreement on one threshold value somewhere in the range of a few hundred kilotons—100, 200, or 300—and was not likely to exceed these amounts. As it turned out, the agreement on a single threshold value occurred, as I can see from my diary entry of March 14, 1984, made a decade after the signing of the treaty:

"At a reception at the U.S. Embassy yesterday, March 13, Bill Hyland, Henry Kissinger's former deputy in the National Security Council, described how the agreement on a threshold of 150 kilotons for the 1974 treaty came about.

He said that the U.S. military wanted to establish the threshold at 600 kilotons, but Kissinger sharply objected, believing that this number was too high. It was then decided to propose the level of 200 kilotons to the Russians. This was the number that Kissinger and Gromyko then agreed upon.

But later Kissinger decided that even 200 kilotons was a bit too high. At the meeting between Brezhnev and Nixon, the latter, at the behest of Kissinger, proposed the 150 kiloton level and insisted on this threshold.

Then Brezhnev, Kosygin, and Podgornyy went to another room in the Great Kremlin Palace to discuss Nixon's proposal among themselves. When they returned, Brezhnev agreed to 150 kilotons, but Gromyko, who was also present, continued to insist on 200 kilotons, noting that the Americans had already agreed to

it. Kosygin broke into the conversation and told the Foreign Minister: Sit down and listen. This last detail was told to me by the Soviet interpreter present during the negotiations at the Kremlin."

Since I was not personally present during the final agreement on the threshold value between the two countries' leaders, I cannot guarantee the accuracy of the information Bill Hyland told me, but judging by other information I have received, it seems likely to be fairly reliable.

In order to ensure confidence in the observation of the provisions of the Treaty between the Soviet Union and the United States on the Limitation of Underground Nuclear Weapons Tests, signed on July 3, 1974, the agreement provided for each party's use of national technical means for monitoring, in accordance with universally recognized principles of international law. Furthermore, both parties were obligated not to interfere with the other party's national technical means for monitoring the agreement.

The agreement also provided for consultations between the parties if questions or doubts about the other party's actions were to arise in the process of observing each other's adherence to the treaty. In order to assist in the realization of the aims and provisions of the treaty the parties could, if needed, consult with one another, make requests for information, and provide information in connection with these requests.

There was also a protocol to the treaty, as mentioned above, which was an integral part of the agreement. The protocol governed issues related to the mutual exchange of information about both parties' test sites and nuclear tests that were conducted. Although the 1974 agreement did not ban all underground nuclear weapons tests, instead establishing a simple threshold for particularly powerful blasts, it naturally required no less confidence in the fact that the parties were abiding strictly by their obligations. Each of the parties had to be convinced that the other party was not exceeding the agreed yield threshold and, of course, this was critically important to national security.

In the protocol, the parties committed to exchanging data on test sites on a reciprocal basis, in order to provide for monitoring of the fulfillment of treaty obligations. These tests sites are like field laboratories, equipped with special instruments and complex equipment used to measure the size of explosive indicators and check the correspondence of design parameters to the actual data obtained as a result of the testing of one type of nuclear device or another.

The main way to detect underground explosions and determine their strength is by recording seismic vibrations in the earth's crust with the aid of seismic instruments. However, several factors influence the effectiveness and accuracy of teleseismic devices, first and foremost the type of ground in which the nuclear explosion is taking place. If the explosion occurs in solid rock, granite for example, then it gives one seismic magnitude, while if an explosion of the same strength occurs in sedimentary rock, the indicators will be different. Therefore, in order to ensure the sufficiently accurate recording of seismic signals, one must know the basic geological and geophysical characteristics of the test sites.

The protocol provided for the mutual exchange of the following data: the geographic coordinates of the boundaries of each test site and the boundaries of the various geophysical test areas within them, information on the geology of these test areas, and information on two explosions for calibration purposes at each geophysically distinct tests area at which underground testing of nuclear weapons had and would continue to occur.

The information on explosions for calibration purposes is important for the tuning of seismic equipment and a more precise determination of explosive force via teleseismic monitoring. Data on the power, date, and time of these explosions, as well as their depth and coordinates, had to be provided. Furthermore, the yield of the calibrating explosions had to be as close to 150 kilotons as possible, and no less than 1/10 of this amount, that is, 15 kilotons. As for test areas for which data on two tests for purposes of calibration were not available, data from one test had to be provided and an exchange of data from a second test provided after the corresponding explosion. The conduct of tests exclusively for purposes of calibration was not required.

The protocol also established that the geographic coordinates of underground nuclear tests had to be provided after the conduct of such tests. The exchange of data on tests sites was to take place together with the exchange of the instruments of treaty ratification, although the

parties agreed on a mutual basis to provide each other the possibility to familiarize themselves with this data before the exchange of instruments of ratification.

I would like to note that it was very nice to see, when observing how the technical details in the protocol were discussed and agreed by the relevant specialists on both sides, how close their understanding was of the various aspects of the problems under consideration. The very fact that the treaty protocol included an agreement on the exchange of information about test sites, which had been secret until that time, was an important event that testified to the favorable trends contributing to a reduction in tensions between the two powers. It is indicative that, as has already been noted, all of the negotiations on the treaty and protocol only took about three weeks.

Although the threshold test ban treaty did not immediately enter into force, the parties had already reached an understanding on observing the agreement not to undertake nuclear explosions with yields exceeding 150 kilotons.

THE TREATY ON UNDERGROUND NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES

However, the question of peaceful nuclear explosions (PNEs) remained. U.S. and Soviet scientific research and experiments had shown that the use of nuclear explosives was significantly more effective than chemical explosives for the realization of many economic projects. The Soviet Union had envisioned the following possible industrial uses of nuclear explosives: intensifying the development of oil and gas fields; the creation of underground caverns for the storage of natural gas, gas condensate, and petroleum products; the creation of underground storage sites for the burial of harmful industrial wastes; underground exploitation of ore deposits; the elimination of accidental gas and oil gushers; the preparation of mineral deposits for open-pit mining; deep geological sounding; the construction of canals, weirs for hydroelectric plants, and water reservoirs, etc.[4] "Operation Plowshare," the U.S. PNE program, got promising results from explosions used to increase gas output and considered explosions for other purposes, such as digging canals (in particular, they examined the desirability of expanding the Panama Canal or digging a parallel canal through Nicaraguan territory), mining, and creating underground storage caverns.

But before the use of nuclear explosions for industrial purposes could be realized in practice, there were many technical, political, and other difficulties that had to be overcome. First and foremost, ways to apply PNEs that eliminated or, at the very least, reduced the release of radioactivity into the environment to tolerable levels had to be developed.

The peaceful use of nuclear energy is closely tied to the problem of nuclear nonproliferation. After all, any nuclear device, whatever its purpose or the perfection of its design, has important features in common. The main feature common to all nuclear devices is that a device of relatively small mass can release an enormous amount of energy in just a few milliseconds. Another distinctive feature of nuclear explosive devices is their relatively small size and weight, which makes it possible to adapt them for military uses with the aid of various means of delivery. Thus, devices designed for peaceful nuclear explosions are not essentially different from devices designed for military use. But the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) does not ban PNEs. To make it possible for non-nuclear weapon states to make use of peaceful nuclear explosions, the NPT includes language stating that states parties will cooperate to ensure that "any potential benefits could be made available to non-nuclear-weapon States... by way of nuclear explosion services provided by nuclear-weapon States... and conducted under the appropriate international observation and international procedures called for in Article V and in accordance with other applicable international obligations." In other words, this meant that the nuclear states could use their nuclear devices to help non-nuclear states to obtain the benefits of PNEs.

Another great difficulty related to the use of PNEs had to do with the issue of banning nuclear weapons tests. Here the problem was in ensuring that PNEs would not be used for purposes related to nuclear weapons.

Both the United States and the Soviet Union had nuclear peaceful use programs with civilian purposes: to dig canals, to create underground facilities for the storage of dangerous materials, for geological probes, etc. The Americans were the leaders in this area: 27 explosions were carried out under the "Operation Plowshare" PNE program from 1960-70, during which time 35 nuclear explosive devices were used. The first PNE was carried out in 1961, and the last one in 1973, though the program continued to be funded until 1977. The most powerful explosion was 105 kilotons.[5] However, the United States, as my good friend Gerald Johnson, the director of the program, once told me, was disillusioned by the PNE program fairly quickly, since underground explosions gave but small economic returns and Americans know how to count money, while such explosions (which, after all, were not carried out at special test sites but in various places around the country) could have dangerous environmental consequences.

In 1974, after the threshold nuclear test ban treaty had been worked out, at the suggestion of the Soviet Union it was agreed that a separate agreement on limiting the yield of PNEs should be elaborated. We insisted upon this as the PNE program was still expanding at that time, and therefore the threshold treaty did not apply to PNEs but stated that they would be regulated by a separate agreement, to be negotiated by the parties and concluded "as soon as possible." In fact, since the Americans had already curtailed their program we were really only negotiating about limits on Soviet explosions. This was justified, since a peaceful nuclear explosion cannot be distinguished from a military explosion, and that means that test explosions to enhance nuclear weapons could be passed off as PNEs. However, it was important for Moscow that it reach an agreement that allowed the Soviet Union to continue its PNE program.

In total, the Soviet Union carried out 124 peaceful nuclear explosions, during the course of which 135 nuclear devices were used. The first Soviet PNE was exploded in 1965, and the last one in 1988. Most of the explosions had small yields, but some reached 80-140 kilotons. Group explosions were also carried out. For instance, in 1971 a group explosion (three nuclear charges of 15 kilotons each) was carried out in Perm region in underground shafts, which resulted in the ejection of soil, as part of an experiment in digging canals.[6]

However, working out a new treaty limiting PNEs proved to be extremely complex. The negotiations in Moscow, which took place in the same building on Staromonetnyy Lane, lasted for one and a half years (from October 1974 through May 1976); moreover, we met quite often. As before, our delegation was headed by Deputy Minister of Medium Machine-Building Igor Morokhov, and he was the ideological inspiration behind the negotiations, but he was often absent due to his duties at the ministry, and during his absence I had to bear this heavy burden. Our delegation also included experts that were very familiar with the conduct of PNEs, including All-Russian Scientific Research Institute of Technical Physics (VNIITF, in Snezhinsk) representative Vadim Simonenko. The U.S. delegation was headed by Walter Stoessel; his deputy was Bob Buckheim.

In the end we both concluded an agreement and agreed on a verification protocol. The parties were obligated not to undertake:

- ❑ Individual peaceful nuclear explosions with a yield of over 150 kilotons;
- ❑ Group explosions with an aggregate yield of over 1.5 megatons; moreover, where the total yield of such an explosion exceeded 150 kilotons, the explosion would be monitored in order to identify each individual explosion and determine that its yield did not exceed 150 kilotons.

The issue of verification was a critical part of the negotiations. So that the opposite party could be convinced that the threshold yield had not been exceeded, the protocol to the treaty contained a very detailed and fairly intrusive system of monitoring and inspections, which the delegations developed with the participation of experts from both states.

The protocol was an integral part of the agreement. It contained an exceptionally elaborate system of various types of measures, methods, and procedures intended to ensure the observance of the agreement. The monitoring system was based on two methods: on the use of national technical monitoring means and on providing the other party access to the sites of large yield PNE explosions. It should be noted that underground peaceful nuclear explosions,

in contrast to nuclear weapons tests, were not carried out at test sites but in quite unexpected locations. This made using teleseismic equipment to get the necessary data more difficult, since there had been no research on the route through which the seismic waves passed during each explosion.

The rights and tasks of the other party's representatives, who were to have been present during PNEs, were very thoroughly described in the protocol. Representatives could be present during any explosion with a planned total yield of over 150 kilotons. In addition, when the parties agreed that it would be useful, the other party's representatives could also be present during explosions in the 100-150 kiloton range. This might be the case when the parties felt that the special features of a project meant that teleseismic measurements could not be ensured with sufficient reliability, and on-site examination would be desirable. At the same time, the protocol stated that the other party's representatives would have no access to the explosive device or any written or other information about its construction, and would not try to obtain it by any means whatsoever. A Joint Consultative Commission was formed in order to help in the implementation of the treaty and protocol.

The treaty was signed on May 28, 1976 by Leonid Brezhnev and the new U.S. president, Gerald Ford, simultaneously in the two capitals—Moscow and Washington—which was unusual at the time in terms of world practice. Richard Nixon had already left office by that time, as a result of the Watergate scandal, and had been replaced by Ford.

One of the positive results of the U.S.-Soviet negotiations on peaceful nuclear explosions was the creation of a detailed, well-developed monitoring system to ensure adherence to the PNE Treaty. This was completely new in the international legal practice of the time.[7]

However, another 15 years were required for both threshold treaties to enter into force.

THE THRESHOLD TREATIES ENTRY INTO FORCE

Even the intrusive monitoring in both threshold treaties and their protocols, and especially in the protocol on PNEs, was not enough for the U.S. Senate to ratify them. The parties continued to adhere to the treaties for about 15 years, although from time to time they sent each other inquiries asserting that the agreed-upon limits had possibly been exceeded. In many cases this could be explained by differences in the geologic structure of the test sites and, therefore, difficulties in taking teleseismic measurements of the magnitude of an explosion from a distance. These inquiries were made quietly and did not lead to any particular claims by either side. I still have a document, prepared in 1985, that gives the number of these inquiries:

Number of inquiries by the Soviet Union and the United States regarding explosions that exceed the threshold level of 150 kilotons

U.S. inquiries sent to the Soviet Union (1976-1985): 13

1976 – 1

1978 – 1

1979 – 3

1980 – 2

1981 – 1

1982 – 2

1983 – 1

1984 – 1

January 29,1985 – 1

Soviet inquiries sent to the United States (1978-1985): 8

1978 – 1

1979 – 1

1982 – 3

1984 – 2

April 25, 1985 – 1

The treaties formally entered into force only after yet more intrusive monitoring protocols had been worked out in the early 1990s. I was not involved in the preparation of these new protocols, as I was on a foreign assignment at the time. Yevgeny Golovko, Igor Palenykh, and Anatoly Belov undertook this work on the part of the Russian Foreign Ministry.

Originally, it was proposed that fulfillment of the threshold treaties would be monitored via the seismic method, to be supplemented by the exchange of information on test sites and their geological characteristics. However, some of the properties of the seismic monitoring method itself left significant uncertainties in the interpretation of data. Thus, the special geological features of the Semipalatinsk Test Site—the hard rock formations in which the nuclear explosions were conducted—resulted in the fact that the seismic signal there was stronger than from equivalent explosions at the Nevada Test Site. This led to suspicions that the established limit for the release of energy could have been exceeded. The criticism of this monitoring system was so strong in the United States that ratification of the treaties in their initial form proved impossible.

While observing the 1974 and 1976 treaties *de facto*, by the early 1990s the Soviet Union and the United States had come to a mutually acceptable solution to the monitoring problem and developed new protocols. This made possible the joint experiments with explosions that were carried out by both parties at the Semipalatinsk and Nevada Test Sites. Viktor Mikhailov, who later became Russian Minister of Atomic Energy (in 1992), led the work on the U.S.-Soviet monitoring experiment for the Soviets.[8]

Under the new verification protocols, the new system of measures to monitor nuclear tests included such procedures as an exchange of information on test sites and on nuclear testing programs, the possibility of access to test sites during their preparation and the receipt of samples of the relevant rock formations, familiarization with the configuration of the placement of the container with the nuclear device as well as the container itself, in addition to monitoring the release of energy through the so-called hydrodynamic method, by measuring the speed of the shock wave during the test near the point of explosion. The latter made it possible to obtain more accurate data on energy release than through the seismic method and, in addition, help calibrate the seismic measurements. All of these activities were carried out with the participation of personnel from the party that was doing the monitoring, who were given access to the test site. An analogous approach was taken with regards to monitoring peaceful nuclear explosions. It should be noted that in working out the protocols to the threshold treaties of 1974 and 1976 it became clear that it was practically impossible to solve the problem of differentiating weapons tests from peaceful activities. In accordance with these treaties, the two activities would be differentiated in accordance with the following formality: any explosion that took place at a test site would be considered a weapons test, and peaceful nuclear explosions would only be allowed outside of the test sites. Of course, this approach did not exclude the possibility of peaceful nuclear explosions concealing weapons tests.[9]

The new verification protocols to the threshold treaties were signed on June 1, 1990, and the treaties entered into force on December 11, 1990. The threshold treaties, together with their verification protocols, brought the Soviet Union and the United States unprecedented levels of mutual openness in the area of nuclear tests. Favorable conditions for further progress in monitoring a ban on any nuclear explosions had been created.

The conclusion, in 1996, of the Comprehensive Test Ban Treaty (CTBT) should essentially have ended the need for the threshold treaties, although, of course, they continue to be in force.

Moreover, the CTBT has still not entered into force, largely due to the negative attitude that the U.S. Congress and the current Bush Administration have taken of it. China, Israel, India, and Pakistan have not adhered to the CTBT either. But the threshold treaties have played a positive role nevertheless, because they were the first to contain such a serious and thorough system for monitoring and inspecting nuclear explosions. Some of their elements were used in the CTBT.

Notes

[1] The author would like to express his deep gratitude to PIR Center Research Council member Victor Slipchenko for his review of this manuscript and his valuable comments on it.

[2] *International Herald Tribune*, November 21, 1975.

[3] *USSR Nuclear Tests: General Characteristics, Goals, and the Organization of USSR Nuclear Tests,* Viktor Mikhailov, ed. (Moscow: IzdAT, 1997), pp. 157-160.

[4] See *Peaceful Nuclear Explosions,* I.D. Morokhov, ed. (Moscow: 1970), pp. 5-6.

[5] *USSR Nuclear Tests,* op. cit, p. 141.

[6] http://en.wikipedia.org/wiki/Operation_Plowshare; *USSR Nuclear Tests,* op. cit, pp. 177-84.

[7] For more details on the threshold PNE treaty see: R. Mikhailov, "Legal Bases for the Regulation of Underground Peaceful Nuclear Explosions," *Sovetskoye gosudarstvo i pravo* (Moscow: 1977), pp. 92-99. For the texts of both threshold treaties in Russian, see: The Soviet Union and the Struggle for Disarmament: A handbook of documents (Moscow: Politizdat, 1977), pp. 137-41 and 159-83.

[8] It should be noted that during the joint experiment on monitoring the yield of nuclear explosions at the Nevada Test Site in 1988, the agreement called for the yield of the underground explosion being monitored not to exceed 150 kilotons (both there and at the Semipalatinsk Test Site); however, the one in the United States proved to be 180 kilotons. This significantly exceeded the agreed requirements, and as a result a collapsed depression was formed. (interview of Viktor Mikhailov in *Vremya novostey*, December 7, 2005). I might add that the Americans were very upset about this and requested that we not speak about the matter publicly; however, the story has since become public knowledge through the media.

[9] Viktor Slipchenko and Oleg Rozhgov, "The Process of Developing Comprehensive Test Ban Treaty Verification Mechanisms," *Yaderny Kontrol*, No. 4, 2001.

IN ANTICIPATION OF NEW APPROACHES

Nuclear Weapons After the Cold War. **Carnegie Moscow Center, Alexei Arbatov and Vladimir Dvorkin, eds. (Moscow: ROSSPEN Russian Political Encyclopedia, 2006).**

Reviewed by Vladimir Orlov

Arguments about Iran's nuclear intentions... Six-party talks on the DPRK nuclear program... The U.S.-Indian agreement on nuclear cooperation... The modernization of China's nuclear weapons... Attempts by terrorist organizations to obtain components of weapons of mass destruction (WMD)...

These are today's realities, and they guarantee that "nuclear" news will continue to make headlines in leading newspapers and lead on prime time television broadcasts. However, the constant presence of the "nuclear factor" in the media, which has meant that discussions of this issue—particularly since the search for WMD was chosen as the pretext for the Iraqi military campaign of 2003—have moved from the traditionally narrow sphere of the expert community to a far broader audience, creates a risk that we will lose sight of the big picture and general trends in favor of immediacy.

That is why it is so important that a *comprehensive* analysis of the "nuclear problem" be undertaken right now, in the new, post-bipolar situation. Of course, this analysis must not be abstract or disengaged from current international politics. Nevertheless, it should not be distracted by happenstance and should be consistent, both on questions of the development of nuclear weapons programs and where nuclear nonproliferation issues are concerned.

The authors assembled under the leadership of Alexei Arbatov and Vladimir Dvorkin rise to the ambitious, wide-ranging task they set themselves with brilliance. First, the editors of *Nuclear Weapons After the Cold War* gathered together a group of star authors to work on the monograph. Many of their names have become synonymous in Russian political science with the topics upon which they have written chapters in this book: Elina Kirichenko and export controls, Roland Timerbaev and the International Atomic Energy Agency (IAEA), Alexander Kalyadin and counterproliferation policy, Vitaly Naumkin and the Middle East, Gennady Evstafiev and Iran, Vasily Mikheev and the Korean Peninsula, Anatoli Diakov and questions about fissile material production, Ekaterina Stepanova and international terrorism... and the list goes on. Readers will easily see for themselves that the editors were able to form a first-rate collection of authors and provide an encompassing picture of the opinions about current (and, to some degree, future) nuclear weapons.

The book is aimed not at newcomers to questions of nonproliferation and nuclear deterrence, but at the well-established expert audience. In this it differs considerably from the other works on nuclear nonproliferation published in Russia to date.

The authors and editors try not to make do with easy answers and not simply to churn out "overviews" on one problem or another or on one region of the world or another, although from the point of view of issue areas and geography the book covers practically all of the "sore points" and includes the broadest—and for the most part accurate and trustworthy—set of factual material that all by itself would make it an irreplaceable reference text for Russia's

community of experts—alongside such unsurpassed tomes as *Deadly Arsenals*, under the editorship of Joseph Cirincione, which has already been issued in two editions by the Carnegie Endowment for International Peace in Washington.[i]

The greatest virtue of this monograph is that it *poses questions* and attempts to *propose solutions*.

From my point of view, the key to understanding the "ideology" of the entire monograph is its chapter four (authored by Alexei Arbatov), "The Problems of the Treaty [on the Nonproliferation of Nuclear Weapons, NPT] and the Nonproliferation Regime," particularly a section entitled "The Dialectics of the 'Peaceful' and 'Military' Atom." At the basis of the NPT, writes the author, there is silence regarding "the premise that the creation of nuclear weapons can be a derivative, or by-product, of the development of peaceful nuclear energy and science. In accordance with this premise, maximum control should be exercised by 'legitimate' nuclear powers and international organizations over supplies of nuclear materials and technologies in order to prevent their military use by recipient states. But in reality, with a few exceptions, this can occur. Brazil and Argentina were moving forward in this sphere without a clear understanding of their final aims; all other countries clearly realized and continue to realize that the use to which they intend to put nuclear energy – military or peaceful – is needed in the final analysis." (p. 143)

The author develops this thesis further, asserting that states like the Netherlands, Switzerland, Taiwan, and Australia did not build nuclear weapons, despite their very high level of scientific, technical, and industrial development in this field and their significant freedom to make use of nuclear materials, not so much because of their membership in the NPT as due to "their confidence in security assurances, which do not depend on treaty norms, or fear of severe international consequences had they created nuclear weapons, which also was not strongly related to the NPT." (p. 143) States that developed a military component did so, in the opinion of Arbatov, "purposefully, and not 'alongside' a peaceful nuclear program. Their motives were not to obtain economic benefits on the side but tasks of an entirely different order, and therefore the promise of economic benefits as a reward for foregoing nuclear weapons, the foundation of the NPT, exerted only weak influence on their policy." (p. 144)

I believe that this key element in the book will give rise to numerous debates; but I am sympathetic to it.

Another indicative proposition in this book, no doubt, is the assertion that the priorities of the P-5, the "nuclear powers," differ *substantially*, a fact that, at the very least, "hampers the elaboration of a common policy... on strengthening the NPT and its arrangements..." (p. 153) Moreover, the "tacking" in the policies of the P-5 towards states that are a threat to nonproliferation create great freedom of action for the latter, while antagonizing "law-abiding" nonnuclear NPT member states and undermining their desire actively to cooperate with the leading powers..." (p. 153) The authors provide numerous examples that convincingly illustrate this thesis. Furthermore, they clearly demonstrate that the nuclear policies of most of the (NPT-recognized) nuclear weapon states are moving in completely the opposite direction from the one prescribed in the Treaty and subsequent NPT Review Conference documents; as a result, the tie between Article VI and the other NPT articles has become hopelessly disconnected through the actions of the weapons states themselves, discrediting the effectiveness of the whole nonproliferation regime.

Speaking of current Russian and U.S. nuclear policy, the authors examine the preservation of the "archaic and absurd system of strategic relations" and outline, albeit with a dotted line, the course of a transition to a new strategic relationship, which they call "nuclear partnership." The authors insist that the time has come to form a "qualitatively new policy both in the sphere of nuclear nonproliferation and in the area of nuclear deterrence." However, the authors admit that this transition can only occur if there is a significant effort made together with a system of well-thought-out and consistent measures and agreements between the leading states, which requires the political will of their leaders; otherwise, the work's recommendations may turn out to be nothing more than a list of good wishes and general declarations.

At one point, summing up their trips to nonproliferation's "sore spots," the authors cannot keep from Cassandra-like warnings (of global scale): "The next state of proliferation, if it gains

momentum, will not simply lead to an exponential growth in the threat of the use of nuclear weapons, but due to the confluence of numerous risk factors could make the use of nuclear weapons practically unavoidable in the foreseeable future." (p. 155)

At the same time, the authors are much more cautious in their discussion of the threat of unsanctioned access to nuclear weapons and nuclear materials, and the problem of nuclear terrorism in general. The chapter by Ekaterina Stepanova and Alexander Pikaev—one of the best in the monograph, in which the authors confidently develop their arguments ("Nuclear terrorism is highly unlikely... but several current trends indicate that this situation could change") on the basis of extensive factual material and do not allow themselves to make the common mistake, whereby issues of WMD terrorism are not examined in the context of the problem of contemporary terrorism as a whole and instead become an object of unscientific political speculation.

The book's authors are less prepared for the debate in its pages on the changing configuration of the official nuclear club, primarily because India, which apparently found the doors to this "closed club" slammed shut in front of it long ago, is now calmly sitting at the table, nearly as an honored guest; whether this pleases people or not, the reality is that the nuclear club has already expanded from five members to at least six – this is a fact of life that cannot be ignored.

There will surely be arguments about the final section of the book, where it attempts to answer the question *what is to be done* under the current circumstances, on the basis of the rather disquieting diagnosis in the book.

In part (for instance, on the question of denying states that leave the NPT the fruits of their Treaty membership), we have a compressed reproduction or citation of the Carnegie Endowment for International Peace's 2005 book *Universal Compliance: A Strategy for Nuclear Security,*[2] which has received a great wave of responses in the press and a very mixed, to a large degree restrained or skeptical, reaction from the international expert community.

In part, the Russian authors and editors draw utterly independent, clear, and harsh conclusions. "Arbatov and Dvorkin's ten points" on the need for a new policy in the sphere of nuclear nonproliferation and nuclear deterrence, if it does not shake the world of nonproliferation and disarmament experts, should at the very least draw a great deal of attention to itself; and there is no doubt that these "ten points" will be the starting point for new academic and, it is hoped, practical discussions.

Notes

[1] Joseph Cirincione, Jon Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats*, Second Edition, Revised and Expanded (Washington: Carnegie Endowment for International Peace, 2005).

[2] George Perkovich, Jessica Tuchman Mathews, Joseph Cirincione, Rose Gottemoeller, and Jon Wolfsthal, *Universal Compliance: A Strategy for Nuclear Security* (Washington: Carnegie Endowment Report, March 2005).

THE *BOMB MAKER* WHO DOUBTED

Lev and the Atom. Academician Lev P. Feoktistov: A Self-Portrait and Reminiscences (Moscow: Voskresenye Press, 2003), 440 pp.

Reviewed by Mikhail Novikov

The history of the creation of the book *Lev and the Atom. Academician Lev P. Feoktistov: A Self-Portrait and Reminiscences* is as follows. In 1999, Lev Feoktistov's work *Nukes Are Not Forever* finally saw the light of day. The volume was published in a small print run in Russian and English through the "Disarmament 2000" campaign of the International Physicians for the Prevention of Nuclear War. The author intended to republish the work, but did not have time: his heart stopped in February 2002. His friends and other like-minded individuals had to take up this task themselves. They decided that together with the book written by Feoktistov himself, they would publish under one cover recollections about him by his associates and companions-in-arms, either recorded in their own hand or from their words, as well as a record of the last public appearances where Academician Feoktistov spoke about the problems of nuclear disarmament and international security.

Lev Feoktistov began his work in 1951 in the theoretical division of KB-11 (this is what the Soviet Union's first nuclear center, at Arzamas-16, was called), headed by Yakov Zeldovich. In the early 1950s, Arzamas-16 was thoroughly examining two possible methods to create a hydrogen bomb: thermonuclear detonation in deuterium (the Zeldovich "pipe") and the construction of a sphere with alternating layers of light (deuterium, tritium, and their chemical compounds) and heavy (uranium-238) elements, dubbed a "layer cake" (*sloyka*) by the idea's author, Andrei Sakharov. Work on the "layer cake" progressed more successfully, and after the U.S. test of a hydrogen device in 1952, which made it necessary to rush to retain nuclear parity between the Soviet Union and the United States, work was based on this method. The "layer cake" was the basis for the hydrogen bomb tested at Semipalatinsk Test Site on August 12, 1953, designated RDS-6s (the test called by the Americans as "Joe-4"). The author describes the dramatic events related to this test as follows. "...in August 1953, the first Soviet hydrogen bomb was successfully tested on the tower of the Semipalatinsk Test Site. Our calculations were confirmed; it was a complete triumph. In a few months Andrei Sakharov would become a Doctor of Physics and Mathematics, Academician, Laureate of the Stalin Prize, Hero of Socialist Labor, and proclaimed, despite his young age, the "father" of the hydrogen bomb... No one doubted at the time that we would continue further down our own, domestic path, developing our first success still further. However, toward the end of 1953, at the very height of euphoria and, it would seem, against all logic, events began to develop in an entirely different direction."

The country's Soviet and Party leadership decided to develop a more powerful, next-generation thermonuclear charge and corresponding intercontinental ballistic missile. The missile was developed, and it was this very rocket that lifted the first artificial satellite into orbit in 1957, as well as the spacecraft with Yuri Gagarin on board in 1961.

In Arzamas-16 they began to search for new ways to build a thermonuclear warhead. And they were found, thanks to the efforts of the large numbers of theorists there, which in addition to

Yakov Zeldovich and Andrei Sakharov's groups included groups led by Igor Tamm and Nikolai Bogolyubov as well. In November 1955, a new bomb design was tested; Lev Feoktistov directly participated in its creation. At that time he was already working in the Urals, at Chelyabinsk-70, where he had moved with a large group of colleagues from KB-11 in September 1955. Feoktistov worked 22 years in the Urals, making a clear contribution to the creation of a large number of "special items," defending his doctoral dissertation, and obtaining many state awards, including the Star of the Hero of Socialist Labor and the Lenin Prize; he was elected a corresponding member of the Soviet Academy of Sciences, and became first deputy scientific director of the institute.

Today, Feoktistov's colleagues in the weapons field recognize that his ideas were decisive in the creation of the warheads developed at Chelyabinsk-70. For instance, Deputy Scientific Director of the All-Russian Scientific Research Institute of Technical Physics (VNIITF) Vadim Simonenko writes in his memoirs about Feoktistov as follows: "Therefore, when I assert 'there is just one Lev,' what I have in mind is that he was a unique source of ideas, a significant proportion of which have already been realized, while some still await their turn.... Essentially, the basis of our institute's development rests to a considerable degree on Lev's ideas. And with this in mind, if one were to speak about the personal influence, let us say, of Sakharov or Zeldovich on the creation of Soviet or Russian nuclear weapons—not timing, but as far as the realization of ideas are concerned—then I would put Lev first."

Lev Feoktistov characterized the special atmosphere that was established at the new facility as follows: "the ambitious, overwhelmingly young people in Chelyabinsk, who thanks to the transfer no longer felt, figuratively speaking, 'the oppression of the venerable,' and feeling a personal responsibility for the work they had been given (an instructive phenomenon, isn't it?), soon enough began to obtain the foremost positions, earning their right to an important place in the spirited competition with other organizations in the same field." One can point to several achievements as examples of this. For instance, already in 1957 a hydrogen bomb designed in Chelyabinsk-70 had been tested and put into series production for the military. It was for participation in its design that Feoktistov received the Lenin Prize in 1958.

Feoktistov considered Chelyabinsk-70's main achievement in military affairs to be the miniaturization of nuclear warheads. In the chapter "Chelyabinsk-70, stepbrother of Arzamas-16," he writes that "it was here, in the beginning of the 1960s, independently of U.S. designs, that the bases for multiple reentry vehicles were developed; this term came to designate a group of warheads located on one delivery vehicle." The trend towards miniaturization was not only true with respect to strategic weaponry. Chelyabinsk-70 became a monopolist in the creation of artillery-fired nuclear projectiles. These small-scale weapons (which had as an indispensable requirement the fact that they were externally indistinguishable from conventional, nonnuclear projectiles) obtained significant force thought methods borrowed from multiple reentry vehicles. Incidentally, this is the very projectile type that was transported from East Germany and stolen by criminals in a captivating story that is also included within the covers of the book currently under review, a story of which Feoktistov is also the author.

Concluding the survey of his activity in Chelyabinsk-70, Feoktistov reviews the development of so-called peaceful nuclear explosives, which were created to solve various applied industrial problems. He notes a very important motive for the work on these charges: "... each of us, in a very human way, greatly wanted the labor to which he was dedicated to bring a direct benefit to society, in this we saw a certain element of internal rehabilitation." Here he undoubtedly is speaking of the realization of the destructiveness of the weapon that was created with the author's participation and the desire to justify himself in his own eyes and in the eyes of future generations. Maybe this moral promise was what served as a *detonator* of the internal changes in the author that led him from *weapons* into *pure* science.

Not long before his departure, Feoktistov wrote a letter to Yefim Slavsky, who headed the Ministry of Medium Machine Building for many years, in which he proposed ending nuclear testing and thus giving the country's leadership the possibility to come out with a winning political initiative at the height of the Cold War. This letter was given a classified designation, and access to it was forbidden even to associates of Feoktistov. The author writes that the letter

had a certain political side to it and, without wanting to compare himself to Sakharov, nevertheless notes that "it was something like the time when Sakharov's books were banned."

Minister Slavsky let him move to Moscow, but only on the condition that he continue to work in the Medium Machine-Building system; the nuclear ministry did not want to end up with a "second Sakharov." Feoktistov went to work at the Kurchatov Institute. Here he once again worked on defense projects, particularly laser weapons. He only managed to transfer to an academic institute in 1988: the Lebedev Physics Institute (FIAN) of the Russian Academy of Sciences, where he had been trying to go ever since he left Chelyabinsk-70.

He headed the FIAN Department of Laser Thermonuclear Fusion. Here, together with Academician Nikolai Basov, he continued to study various types of nuclear and thermonuclear reactors, work he had already begun in Chelyabinsk-70. The loud anti-nuclear power campaign that unfolded after the accident at the Chernobyl NPP cut Feoktistov to the quick, bringing into question his dream of using the enormous number of achievements obtained in the course of creating nuclear weapons to peaceful use. Therefore, one of the main avenues of Feoktistov's work during his last years was on a new concept for the construction of a nuclear reactor with internal, physically inherent safety systems. In his opinion, the ideal reactor should be such that any operator errors would lead the nuclear reaction to cease through internal mechanisms in accordance with the laws of physics.

Thanks to this research, the concept of the hybrid reactor was developed: a system combining elements of fission and fusion. The proposed reactor would include a subcritical nuclear assembly that is irradiated by an external neutron source, created through the compression of a thermonuclear target with laser beams. If the laser does not operate for any reason, including operator error, then the reactor simply would not start. In Feoktistov's opinion, only time will tell if the hybrid reactor is completely independent or just one step in the mastery of thermonuclear energy.

Academician Feoktistov supported the program to import spent nuclear fuel (SNF) and reprocess it in Russia, and even justified it in the State Duma. His arguments were as follows. First, the accidents at Mayak and Chernobyl taught the expert nuclear physicists there how to work with these materials better than anyone else in the world. Second, SNF potentially has great value as a source of nuclear material that can be extracted and sold on the world market. Thus, the realization of a comprehensive SNF program could ensure funding for the development of a new generation of physically safe reactors, as well as ecological and social programs in the nuclear sphere.

Despite his participation in military nuclear programs, or rather, most likely due to this very circumstance, Feoktistov spoke actively in favor of a radical reduction of nuclear weapons, up to and including their complete elimination. In 1999, when it was already clear that the plan proposed by Mikhail Gorbachev to get rid of all nuclear weapons by 2000 was not going to happen, he wrote in his book *Nukes Are Not Forever*: "Nuclear weapons have existed for 50 years.... You think with horror that they will exist another 50 years, and the lives of our grandchildren and great-grandchildren will remain under the threat of complete destruction... The assertion that in 50 years there have not been any great wars thanks to nuclear deterrence, in my view, is groundless. Especially since there have been wars—although not global in scale, but many years in length."

He contended that unforeseen circumstances where nuclear weapons might be used are less probable in a nuclear-free world, when there is global control over the spread of nuclear weapons that is both strict and obligatory both for former nuclear and for nonnuclear states. In 2000, at a conference in U.N. headquarters, Academician Feoktistov proposed that the United States, as the recognized world leader, play a leading role in the process of global nuclear disarmament, proposing a program of total disarmament to the nuclear states by, for instance, the year 2010.

The final document by Feoktistov published in the book is a draft address to Russian President Putin with a specific proposal on the organization of the development of a new generation of nuclear reactors that are safe from the point of view of the proliferation of nuclear materials

directly suitable for the construction of a nuclear weapon. This document is dated January 2002; in February of the same year Lev Petrovich's heart stopped.

The uniqueness of the book reviewed here, and the uniqueness of its main hero and author, lie in the fact that under one cover we find a compilation of the recollections of both *bomb makers* and academic scientists. The *weaponeers* either neutrally present the facts and Feoktistov's contribution to science, or do not agree that nuclear weapons have outlived their usefulness. The representatives of "pure" science either do not deal with these questions or support Feoktistov. He alone, during the course of his life, was transformed from a *bomb maker* to a convinced supporter of total nuclear disarmament and was willing to state this publicly, defending his ideas. Many people directly involved in the creation of nuclear warheads have left Chelyabinsk-70 at various times, but only Lev Feoktistov became a figure of significance, who was not afraid publicly to voice his views, although they frequently did not coincide with those that were commonly accepted.

BETWEEN VENGEANCE AND RETRIBUTION: A NEW VIEW OF THE MOSSAD'S MOST MYSTERIOUS OPERATION

Aaron J. Klein, *Striking Back: The 1972 Munich Olympics Massacre and Israel's Deadly Response* (New York: Random House, 2006).

Reviewed by Konstantin Eggert

As the eight Black September gunmen climbed over the Olympic Village fence in Munich on September 5, 1972, they could hardly imagine the full consequences of their actions. All they wanted was to exchange the hostages for a couple hundred Palestinian inmates in Israeli prisons. Their intention was to attract as much notice from the press as they could. However, they hardly expected that they would enter into history and would possibly even change its course. Twenty-four hours later most of the terrorists and all of the hostages were dead, while the so-called Kitchen Cabinet of Israeli Prime Minister Golda Meir made a decision to launch a campaign of retribution unprecedented in its duration and in resources spent, against the Black September organization and, essentially, against the Palestinian leadership as a whole, as well as its international representatives.

Up until this point, the famous best seller *Vengeance,* written by the Canadian author George Jonas and published in 1984, has been considered the main, albeit rather fragmentary, source of information on the subject. Steven Spielberg based his film *Munich* on that very book. The American director portrays the Mossad agents not as "knights without fear, blemish, and doubt," but as people who, in the end, begin to question whether their mission is worth all the sacrifice. Precisely this caused the mixed, if not angry, reaction of many in Israel.

Six years prior to Steven Spielberg's film, director Kevin MacDonald made a documentary entitled *One Day in September*. The detailed reconstruction of the Munich tragedy earned the film an Oscar. MacDonald presented the West German officials in an unsavory light, including Hans-Dietrich Genscher, who was West Germany's Minister of Internal Affairs in 1972. German officials are shown as callous and incompetent. In addition, the director tracked down the only remaining terrorist still alive, Jamal al-Jashi, who told his version of the events for the first time on camera.

Aaron Klein, a war correspondent for *Time* magazine's Jerusalem bureau, set himself the goal of making the first significant contribution to the debate since Jonas and MacDonald. He had good reason: Aaron Klein had previously served as a captain in Israeli military intelligence, which allowed him to rely on the singular ties that are only available within the self-enclosed intelligence community. *Striking Back: The 1972 Munich Olympics Massacre and Israel's Deadly Response* presents the inside perspective on the 20-year anti-terrorist marathon, i.e. the viewpoint of those who directly participated in the assassination plots against the PLO members.

Klein's prose does not rise to the level of the classics of documentary journalism, such as Mark Bowden's *Black Hawk Down: A Story of Modern War* and *Killing Pablo: The Hunt*

for the World's Greatest Outlaw. His style is that of a military officer accustomed to expressing himself simply and clearly. The strengths of *Striking Back* are not its literary embellishments but rather heretofore unknown facts and testimonies by the Mossad operatives.

Klein begins with a detailed analysis of the events immediately preceding the hostage taking. And from the outset, he offers eye-openers: while until now the charge of incompetence has been laid at the feet of German officials and policemen, *Striking Back* hits at the Israeli bureaucracy who, according to Klein, carelessly brushed aside the warnings that came from head of the Munich Israeli delegation Shmuel Lalkin. Lalkin kept saying from the very beginning that the Israeli athletes' security at the Olympic village was not being provided for in any meaningful way. The Germans' desire to make the world forget about the 1936 Olympics, which were a highlight of the Nazi propaganda machine, played a dirty trick on them and turned into a tragedy for the Israelis. The authorities in Bavaria and West Germany were eager to reveal the new image of a pacifist, safe, and benevolent Germany. They deemed the presence of armed police at the Olympic sites undesirable. They spent only U.S. $2 million on security needs, which is not much, even when adjusted for 30 years of inflation. For comparison, Klein cites the $1 billion spent on the 2004 Olympics in Athens. However, even had the police been at the Olympic village on that fateful day in September, it is no guarantee that they would have been able to undertake anything: West Germany at the time did not possess even a single qualified anti-terrorist police specialist, not one professional negotiator, not even a single professional sniper. In addition, while the Bavarian officials were as apprehensive of the federal authorities as they had been traditionally, the federal authorities were dead set against allowing an Israeli special troops unit to launch a hostage rescue operation in Munich.

Klein's analysis of the errors made by the German police reaches the point of highest intensity during his recounting of the massacre that took place at the Fürstenfeldbruck Air Base. The reader of this chapter comes to the realization that the fate of the nine athletes captured by the Palestinian gunmen had been effectively predetermined.

German authorities have conducted an investigation of the terrorist act. The results have been kept top-secret for almost 20 years. Many may find that Klein shows some bias, as he does not hide his sympathies for the relatives of the murdered Israelis who for 20 years sought to declassify the archived documents and for almost another decade to receive compensation from the West German government.

Klein, however, is equally critical of the Israelis. *Striking Back* reveals the decision-making mechanism behind the launch of the retaliatory operation—it was an insider decision based on a nebulous strategy—as well as the state of the Israeli intelligence community destined to carry it out. Here is but one example: Cesaria, the top-secret subdivision within Mossad that got the task in 1972, did not even have a television set with a satellite antenna to receive Arabic TV channels. Moreover, if we are to believe Klein, only the Munich tragedy forced the Israeli political establishment to engage seriously in developing a global intelligence network and to systematize the disparate data on Palestinian organizations.

Klein interviewed dozens of participants in the retaliatory operation. Some later retired and built political careers, as did Ehud Barak, who subsequently became chief of the general staff and later prime minister. Others conceal their identities even today, since they are still on active duty in Mossad. From the time of the assassination of the first suspected co-conspirator in the Munich affair, the murder of the PLO representative Wael Zuaiter in Rome in 1972, until the execution of the Palestinian Security Service representative Atef Bseiso in Paris in 1992, two decades have elapsed, while significant staff rotations have occurred within Mossad. What remained unchanged, according to the author, were lists of the Palestinian officials targeted for assassination. The majority of the retaliatory operations was authorized by Israeli prime ministers. Some of them did it unwillingly, some did it enthusiastically, but Klein leaves no doubt about the fact that these convictions in absentia often led to murdering innocents. For instance, it is doubtful that the poet and translator Zuaiter, while he was sympathetic toward the terrorists, took part in planning the terrorist acts. The

same may be said about Mahmud Hamshari, a PLO representative in Paris who was assassinated by a bomb planted in his home telephone set.

Among the victims of assassinations were also those who had spilled the innocent blood of Israelis, Europeans, and Americans. One such man was Wadie Haddad, one of the kings of Palestinian terror, a leader of the Popular Front for the Liberation of Palestine, a radical wing of the Arab Nationalist Movement. He died in 1978 as the result of a sudden and agonizing illness. Klein discloses for the first time the mystery of Haddad's death, which resulted from a cunningly planned and effectively carried out lethal poisoning.

The drive to avenge Munich was so powerful that the degree of participation in the Munich terrorist act by any given Palestinian was of little importance to Mossad and the Israeli cabinet. That Aaron Klein comes to this conclusion is surprisingly candid for a former intelligence agent. In fact, even Black September—the hunt for whose leaders launched the whole operation—was a semi-mythical organization. Behind this name, Klein reminds the reader, stood the leaders of the PLO. The Mossad operation with time turned from a retaliatory act avenging the athletes' death into a total war against all Palestinian organizations of any kind, from Arafat's Fatah to small terrorist cells.

Two suspenseful chapters in the book deserve particular attention. One provides a classic example of a successful special operation, the other a classic example of failure. On April 9, 1973, a group of Israeli commandoes landed on a beach in Beirut and attacked a building that housed prominent Palestinian leaders, including Fatah field commanders Kamal Adwan and Abu Yussef el-Najar, as well as the chief of PLO propaganda Kamal Nasser. All three were assassinated within minutes. The operation, codenamed Spring of Youth, entered special forces training manuals around the globe. During the same year, 1973, a Mossad combat team shot an Algerian waiter with a Moroccan passport, Ahmad Boushiki, in Lillehammer, Norway, mistaking him for Ali Hassan Salameh, commander of Force 17, a special troops unit that served as Yassir Arafat's personal guards. Many years later, Israel paid compensation to the waiter's family. The colossal failure of the Israelis was exacerbated by the fact that some members of the combat team were arrested and convicted in Norway. This blunder seriously damaged Israel's image in Europe and tarnished the notion that Israeli Special Forces are 100 percent effective. However, six years later in Beirut, Mossad did find and assassinate Salameh.

To some extent, *Striking Back* does not simply tell a story of a particular operation but traces the history of Mossad's inception and development. Israeli intelligence agencies learned from their mistakes and, in the end, won the war against PLO terrorists. Today, the veterans of the Palestinian resistance movement of the 1970-80s are among those who support head of the Palestinian Authority Mahmud Abbas and are ready to compromise with Israel.

To use boxing terminology, however, Mossad's victory was by points, rather than by a knockout. It would have hardly been possible without the destruction of the PLO infrastructure in Lebanon, carried out by the Israeli army in 1982; without the collapse of the socialist bloc and the Soviet Union, which had been an important international ally to the Palestinians; or, finally, without the catastrophic financial shortages and isolation within the Arabic world that resulted from Yassir Arafat's support of the Iraqi invasion of Kuwait in 1990. The combination of these and other factors forced Arafat and the PLO to seek, albeit unwillingly and without full sincerity, compromise with Israel.

Striking Back gives its due to the self-sacrifice and professionalism of Mossad agents. At the same time, Klein admits that the price of the Israeli victory over PLO terror is high both in a monetary sense and, more importantly, in a moral sense. For that, the book by a former captain of military intelligence earns the reader's trust.

As an aside, the three chief plotters of the Munich raid escaped Israeli retribution. Two of them, Salah Khalaf (Abu Iyad) and Fakhri Al-Umri were assassinated in 1991 by a Palestinian member of the renegade Abu Nidal group. The third, Muhammad Aude (Abu Daoud) is still alive and

lives in Damascus. In a December 2005 interview with the London *Times*, Daoud refused to apologize for the kidnapping that led to the athletes' deaths.[1]

Notes

[1] Ian McKinnon, "I do not regret athletes' death, says Munich massacre plotter," *Times*, December 28, 2005 <http://www.timesonline.co.uk/article/0,,251-1961099,00.html>, last accessed January 13, 2007.

THE PUBLICATION OF THE FIRST ISSUE OF *SECURITY INDEX*… IS NO DOUBT A VERY NECESSARY AND TIMELY EVENT

To the Editor-in-Chief,

Today no one would doubt that by combining efforts on the basis of the observance of international norms and principles, the global community can successfully oppose the threats and challenges of our time.

Understanding the importance of collective efforts in solving these problems, Russia is working to develop the most active cooperation in the security sphere.

In this regard, the level that has been reached on questions of Russian cooperation with leading European and Euro-Atlantic organizations is particularly significant.

Even very recently it would have been difficult to imagine, but in the 21st century we have been successfully tackling the most urgent problems of mutual interest in many areas.

The publication of the first issue of *Security Index*, which is intended as a clear and reliable source of objective information on Russian foreign and defense policy not compromised by politics and ideology, is no doubt a very necessary and timely event.

I am certain that the new publication will engender a lively response, not only from politicians and experts in the sphere of international relations but also from representatives of scientific and business circles.

Sergei Ivanov
The First Deputy Chairman
The Russian Federation Government
Krasnopresnenskaya Quay, 2
Moscow, 103274, Russia

I AM COUNTING ON YOUR EXPERT ASSISTANCE

To the Editor-in-Chief,

Congratulations on the publication of the first issue of *Security Index*. I view this as persuasive confirmation of the need for the research that your Center has been carrying out over the

course of over a decade on a broad range of international security topics, including disarmament and nonproliferation.

The results of your work are of particular interest for the country's foreign policy agencies, given the relapses into a policy of the unilateral use of force that have caused small countries to feel that security is scarce and pushed large countries towards increasing weapons procurement. The continuing stagnation, though no fault of Russia, in the area of disarmament as well as the increasing potential for conflict in the world as a whole are also causes for concern.

I am counting on your expert assistance in the search for effective responses to the challenges and threats associated with large-scale international terrorist activity, the weakening of the nonproliferation regime, the aspirations of several countries to untie their hands in order to weaponize space, as well as the misuse of information technologies.

I wish the Center staff the best of success in their work, and hope that the journal will find its way to numerous readers.

Sergei Lavrov
Minister
Russian Ministry of Foreign Affairs
Smolenskaya-Sennaya Square, 32/32
Moscow, 121200, Russia

SECURITY INDEX SHOULD BECOME AN EFFECTIVE AND RELIABLE AIDE IN SOLVING THE SIGNIFICANT ISSUES THAT STAND BEFORE RUSSIA'S NUCLEAR BRANCH

To the Editor-in-Chief,

Today nuclear power is enjoying a rebirth worldwide. The Russian nuclear power industry has a big job ahead of it: increasing the share of nuclear power in the nation's energy production to 25%, and in the future to 30%, with the launch of at least two new nuclear power units each year. Maintaining the nation's nuclear weapons complex at the level needed to ensure national security is equally vital. Russia plays a leading role in mobilizing international efforts to strengthen the nuclear nonproliferation regime. A concrete example is Russian President Vladimir Putin's initiative to create international nuclear fuel cycle centers.

Given these circumstances, the professional and timely examination of questions related to nuclear power and nuclear nonproliferation is of practical interest to everyone working in the Russian nuclear power industry.

During its 12 years of existence, the PIR Center's journal *Yaderny Kontrol* won the recognition of specialists throughout the nuclear industry, becoming one of the most authoritative sources of information on questions related to nuclear power and WMD nonproliferation. I hope that the PIR Center's new journal, *Security Index*, which is its successor, will maintain an editorial policy of *loyalty* to covering nuclear issues.

I would like to take advantage of this occasion to congratulate the staff of the PIR Center for Policy Studies (Russia) on the publication of the first issue of *Security Index*.

The PIR Center's professionalism and energy make us confident that the publication will become an effective and reliable aide in solving the significant issues that stand before Russia's nuclear branch.

Sergei Kiriyenko
Head
The Federal Atomic Energy Agency
Bolshaya Ordynka Street, 24/26
Moscow, 109017, Russia

THERE IS NO REASON TO DOUBT THE RELEVANCE OF THE NEW PUBLICATION

To the Editor-in-Chief,

The *Rosoboronexport* State Corporation would like to congratulate the PIR Center with the first issue of the journal *Security Index*.

There is no reason to doubt the urgency of the new publication and our cooperation.

Special international legal mechanisms have been devised to monitor transfers of military equipment in the global arms trade. Russia values its reputation on the global arms market and therefore implements all relevant control measures with particular care.

As one of the top five exporters, which supplies armaments and military equipment to more than 60 countries, Russia does not permit exports that might undermine regional stability, aggravate crises, or violate embargoes or other international agreements.

Given globalization, we believe that the Russian system for military and technical cooperation, in which the *Rosoboronexport* State Corporation plays a leading role, can play a positive role in developing international military cooperation, providing for national and collective security, maintaining global stability, stimulating economic growth, and improving people's quality of life.

I wish *Security Index* continuing success in the international dialogue aimed at a comprehensive analysis of security issues and the search for the best possible ways to harmonize intergovernmental and international relations.

Best of luck, my dear friends!

Sergei Chemezov
General Director
FGUP Rosoboronexport
Gogolevsky Boulevard, 21
Moscow, 113324, Russia

A WELL-DEFINED AND TOPICAL NAME

To the Editor-in-Chief,

Please accept my congratulations to you and your colleagues at the PIR Center on the publication of the first issue of your updated journal, which has come out under the well-defined and topical name *Security Index.*

In today's complex and globalized world problems related to ensuring security—in the broadest sense of this word—have once again come to the fore for the entire global community. These problems require qualified professional analysis that takes into account both current geopolitical realities and the long-term prospects for the development of the military and political situation in the world as a whole, as well as in its various regions. Only with a clear understanding of the driving forces of global processes, as well as the sources and fundamental nature of new threats, can one develop solutions to ensure global strategic stability and Russian national security.

The new publication's predecessor—the journal *Yaderny Kontrol*—did a great deal to inform the public in our country and abroad on issues such as nonproliferation of weapons of mass destruction, arms control, and international security. I hope that the journal's new format will

make it possible to expand the topics it covers, attract new, interesting authors, and more deeply investigate the processes now taking place in the world.

Yury Baluevsky
Chief of the General Staff
Russian Federation Armed Forces
K-160, Znamenka, 19
Moscow, 119160, Russia

THE STRENGTHS OF THE STATE, THE BUSINESS COMMUNITY, THE MEDIA, AND INDEPENDENT ANALYTICAL ORGANIZATIONS MUST BE BROUGHT TOGETHER TO FIND EFFECTIVE AND NONTRIVIAL ANSWERS TO NEW CHALLENGES

To the Editor-in-Chief,

The appearance of a new publication always engenders interest and attention, particularly when the journal is the successor to a well-known journal like *Yaderny Kontrol*. During the years of its existence, *Yaderny Kontrol* became one of the most authoritative sources of information on current international security issues for both Russian and foreign experts. Over time the journal expanded—not only in terms of the numbers of pages and the quantity of authors and interviews it attracted, but also in terms of the extent and breadth of the issues and events that it covered.

Despite the fact that the name *Yaderny Kontrol* became quite well known and was virtually a business card for the PIR Center and Russian analysis on WMD nonproliferation and arms control issues, the considerable broadening of issue areas touched upon in the journal's pages made the changing of its name a logical step in the formation of an expert dialogue in Russia on issues related to security.

The journal's new name reflects the fact that the publication, like all of the PIR Center's academic analysis, exceeded the realm of nonproliferation long ago and now includes all of the fundamental security issues that are of concern in the 21st century. This expansion of topical areas is extremely well timed, as it takes into account the increasing complexity and multiplicity of factors involved in the security problems facing the global community and our nation at the present time.

In recent years, along with classic 20th century problems such as regional crises and conflicts, we are more frequently hearing of and recognizing ever more serious threats, the problems of terrorism, political and religious extremism in its various manifestations, separatism, the illegal narcotics trade, human trafficking, environmental and man-made catastrophes, the threat of the proliferation of weapons of mass destruction, organized crime, etc.

Regardless of the order in which we enumerate these problems, it is clear that together they have a very strong and very dangerous explosive potential and directly effect the security both of individual states and the entire international community.

The quality of the answers to these threats, to traditional threats, as well as to the new challenges to national and global security in many ways depends on bringing together the efforts of the entire world, including Russia. It is critical that state organizations, the media, nongovernmental organizations, businesses, and independent analytical organizations like the PIR Center are brought together to find effective and nontrivial answers to the challenges and threats. I am certain that the new journal *Security Index* will be as necessary to people involved in working out solutions in the security sphere as its predecessor, Ya*derny Kontrol*, was before it.

I would like to refer to the definition of the word "index," which means an indicator of the development, change in processes, and phenomena during a particular period of time. We have just seen this in the table, and on behalf of the Security Council staff would like to wish for the new journal that this indicator would always remain valid, strictly calculated, and scientifically substantiated so that it may help all states, nongovernmental organizations, and all of humanity in the search for realistic means to combat current threats.

The best of success to the new journal!

Valentin Sobolev
Deputy Secretary
The Russian Security Council
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Moscow, 103132, Russia

THE PIR CENTER IS ONE OF THE MOST DYNAMIC, DEEPEST, AND MOST CREATIVE THINK TANKS IN RUSSIA

To the Editor-in-Chief,

It is not every day that a Russian policy journal is launched. And it is definitely not every day when such a journal is launched not only in Russian, but also as an *international edition* – in English. This fact alone already would have raised attention to the final product.

But *Index Bezopasnosti*, or *Security Index* – this is the title of a newborn publication – is also unique because it a result of work of a Russian *non-governmental* research and policy institute. For 14 years, the Center for Policy Studies – known by its Russian acronym as the P.I.R. Center – has been a most dynamic, creative and thoughtful think tank in Russia dealing with a wide range of international security issues, from nuclear nonproliferation to critical infrastructure protection, from regional security issues in Central Asia to energy security. It has successfully attracted the attention of those audiences who usually are not starving from a lack of information or analytical papers: from foreign policy practitioners to the business community, from media to legislators.

I should say that the Center for Policy Studies, dealing a lot with proliferation, has finally become a proliferator itself: It is now proliferating its knowledge, analysis and assessments into Geneva, and through Geneva – to Europe and worldwide.

Today we are witnessing an important step: *Centre russe d'études politiques* has been established in Geneva, as a partner of and a European platform for the Moscow-based PIR Center. It is a bold move by a Russian NGO.

But I am glad to see that this move has already been converted, under the energetic leadership of Vladimir Orlov, into a very practical project. Just open this journal – which you either have already received or will receive right after this reception – and you will find a number of articles, a number of points which are critical to better understand Russia, to *read Russia right*. Whether it is the situation in the Middle East, or competition over resources of the Caspian, policy towards Iran or a future of the INF treaty, - read this journal, and after this reading you will know for sure that you are better prepared, better equipped to follow the logic of Russia's foreign and security policy as well as follow a debate over this policy going on in Russia.

This journal – and, I am sure, the mission of the newly established *Centre russe d'études politiques* – is also about *dialogue*. Look at the article written for *Security Index* by a US bestselling journalist, David Hoffman, on unknown pages of the worst times of the cold war in 1983. Look at the documents he has revealed. The two sides did not listen to each other! And that could lead to a global catastrophe.

The security dialogue, launched on the pages of *Security Index*, helps us all better listen to each other, hear each other, and work together on cooperatively building the new security architecture of a new multipolar world.

Valery Loshchinin
Permanent Representative of the Russian Federation to the United Nations Office and other International Organizations in Geneva
Mission Permanente de la Russie, 15 Avenue de la Paix, 1211 Geneva 20, Switzerland

I AM FLATTERED THAT YOU CHOSE GENEVA

To the Editor-in-Chief,

I want to express my most heart-felt congratulations for the launch of your new publication. I had the privilege to receive the first edition of *Security Index* just freshly out of the printing office and I had a look at it. I'm very much impressed by the quality of the authors and by the quality of their analysis. *Security Index* is a most valuable contribution to modern security policy thinking.

We are particularly honored and proud that you choose Geneva not only for the launching of the international edition of your publication but also for the presence of the european branch of the PIR-Center, the *Centre russe d'études politiques*. Geneva understands itself as a platform for the international community. It is there to serve all of you: individuals, thinkers, organisations and states. We know there was a strong competition from other cities and you have chosen Geneva. Geneva is perfectly neutral. Geneva is perfectly linked to other institutions in modern security. And if you are once tired of thinking, the fantastic ski slopes of Crans Montana, Verbier and Zermatt are very close. But we are also very happy for historical reasons that you chose Geneva. In fact, some time ago, the University of Geneva had more Russian than Swiss students.

So, we wish you, the new publication and the new branch of your center all the best you can achieve. We wish you a long life, we wish you a good health, we wish you strength, and we wish you a major impact on international security.

Erwin Hofer
Ambassador of Switzerland to the Russian Federation
Ogorodnaya Sloboda Side Street, 2/5
Moscow, 101000, Russia

TO OBTAIN NEW AUTHORS AND NEW READERS

To the Editor-in-Chief,

For many years I have been a reader of and author published in *Yaderny Kontrol,* and therefore have mixed feelings about the editorial board's decision to rename that publication.

On the one hand, *Yaderny Kontrol* was, I would say, the most authoritative and, even more importantly, influential Russian publication devoted to the issues of arms control, security, and nuclear nonproliferation. The opinions of the journal's authors had a noticeable effect on the

course of discussions within the Russian expert community while the materials that were published provided a direction for academic debate.

On the other hand, changing the journal's name to *Security Index* reflects the expansion of threats that has occurred in recent years and the need for the journal to appear in a new form: as a Russian journal on international security. And this will offer its readers new interesting topics and new possibilities for discussion.

I am confident that broadening the range of problems discussed in the publication will not lead to a reduction in the depth of analysis, and will enable the editorial board to pay even more attention to both the technological and political aspects of security issues, while maintaining the priority of nuclear security. I would like to see the journal not simply focus on an analysis of contemporary threats to international and national security, but also look to tomorrow and the potential problems and challenges that we will face as high technology spreads throughout the world. The journal's new approach towards choosing topics of interest should make it possible to include such important subjects for the future of Russia as the country's technological development and its economic competitiveness in the sphere of high technology on world markets.

I hope that the PIR Center's journal will not simply preserve and build upon the authority that *Yaderny Kontrol* earned within the expert community, but also acquire new authors and readers for whom the journal *Security Index* will become the No. 1 academic publication!

Nikolai Ponomarev-Stepnoi
Vice President
The Russian Research Center Kurchatov Institute
Kurchatova Square, 1
Moscow, 123182, Russia

A PLATFORM FOR DISCUSSION ON ENERGY ISSUES

To the Editor-in-Chief,

Today we are tackling the problem of sustainable energy supply to the mankind. And me as a scientist, I'm convinced that it is nuclear energy which will be serving the mankind and serving for the purpose of energy supplies for hundreds and even thousands of years. And the task we have in front of us today is twofold. On the one hand we have to learn to use the most advanced, the newest nuclear technologies. And on the on the other hand we have to secure the nonproliferation of WMDs. And the attainment of such tasks cannot be provided only through just technology. In order to resolve this task we need both the political, scientific and social communities to be brought together in order to tackle multifold political, social and other measures of providing the energy security.

I'm convinced that the journal will provide all the necessary information and insight in how it can be attained. I would like to wish success to the journal, to the authors and to all of us.

Anatoly Zrodnikov
Director,
State Scientific Center of the Russian Federation –
Institute For Physics and
A.I. Leypunsky Institute for Physics and Power Engineering
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Obninsk, 249030, Kaluga region, Russia

PIR CENTER PUBLICATIONS ARE AN IMPORTANT SOURCE OF KNOWLEDGE FOR STUDENTS AND YOUNG SPECIALISTS

To the Editor-in-Chief,

I would like to send my greetings and congratulations to the associates of the PIR Center for Policy Studies in Russia upon the publication of the first issue of *Security Index*!

Over the course of many years, the PIR Center's publications have been an important source of knowledge for students and young specialists taking their first steps in learning about international security and international relations, as well as for experts who have already received their degrees and are participating directly in the formation of Russian foreign policy on a daily basis. I am certain that *Security Index* will also occupy an important place on the desks of Russian specialists who are professionally engaged in international security issues.

It is pleasant to note that the PIR Center has always paid special attention to educational activities, providing access to the pages of its publications not only to acknowledged experts, well-known scholars, and practitioners, but also to young researchers. At the same time, the Center has actively sought out graduates of regional universities to work with it. It is therefore no accident that MGIMO has been a member of the PIR Center Advisory Board for many years: we see this independent academic research institute as a worthy partner in training young experts in the area of international security.

It is doubly pleasant that the reigns of the PIR Center are in the hands of two MGIMO graduates—the chairman of the PIR Center Executive Board is Ambassador Extraordinary and Plenipotentiary Roland Mikhailovich Timerbaev while the director of the Center is Vladimir Andreevich Orlov—which makes it possible for us to consider the PIR Center's successes and achievements as our own.

I wish *Security Index* a pleasant voyage through the stormy seas of the world's oceans and Center associates new creative successes and accomplishments! Sincerely,

Anatoly Torkunov
Dean
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Moscow, 119454, Russia

ABOUT THE AUTHORS

Baluevsky, Yury Nikolaevich, Chief of the Russian Federation Armed Forces General Staff, First Deputy Minister of Defense of the Russian Federation, Army General. Born in 1947 in Truskavets, Lvov Oblast, Ukraine. Graduated from the Leningrad Higher Joint Forces Command School in 1970, from the Frunze Military Academy in 1980, and from the USSR Armed Forces General Staff Military Academy in 1990. In 1982-88 served in leadership positions in the Main Operations Directorate of the USSR Armed Forces General Staff. In 1990 became deputy head and then head of the Main Operations Directorate of the General Staff. In 1993-95 was head of staff and first deputy commander of the Russian Forces in the Caucasus Region. In June 1995 became directorate head and deputy director of the Main Operations Directorate of the Russian Federation Armed Forces. In August 1997 because director of the Main Operations Directorate of the Russian Federation Armed Forces. In June 2001 was named first deputy director of the Russian Federation Armed Forces General Staff. In July 2004 appointed director of the Russian Federation Armed Forces General Staff and first deputy defense minister of Russia. In November 2004 appointed chairman of the CIS Council of Heads of General Staffs.

Eggert, Konstantin Petrovich, Editor-in-Chief of the Moscow bureau of the BBC Russian Service member of *Security Index* editorial board. Born in 1964. Graduated from Moscow State University's Institute of Asian and African Countries in 1987, where he studied history and Arabic. After the university he served in the army as a member of the Soviet military mission in the Yemen Arab Republic. In 1980-90 worked in the Middle East. He worked for the newspapers *Kuranty* and *Izvestia*. He became a diplomatic correspondent for the latter, and then deputy international editor. Since 2002 he has been editor-in-chief of the Moscow bureau of the BBC Russian service. He is a member of the Royal Institute of International Relations in London, a member of the PIR Center Advisory Board, and a member of the board of founders of *the Centre russe d'études politiques, Genève*. Email address: *konstantin.eggert@bbc.co.uk*

Evstafiev, Dmitry Gennadievich, independent expert. Born in 1966. Graduated from the History Department of Moscow State University's Institute of Asian and African Countries with honors in 1989, then served as a junior research associate, and then research associate, at the RAS U.S. and Canada Institute, where he received a degree of candidate in political science in 1993, defending a dissertation in the area of military policy. In 1995-98 worked as a senior, leading expert at the Russian Institute for Strategic Research (RISI). Later served as a senior research associate and project director at the PIR Center. Leading expert on the military and political facets of Russian national security, U.S. foreign and military policy, and regional aspects of nuclear nonproliferation. In 2001-06 worked for the KROS Public Relations Development Company, serving part of that time as vice president. Member of the PIR Center Advisory Board and *Security Index* editorial board.

Evstafiev, Gennady Mikhailovich, PIR Center Senior Advisor, Lieutenant-General (ret.). Born in 1938. He has worked in governmental agencies for over 40 years, including Soviet

embassies in Pakistan and other countries, and the UN Secretariat. In 1986-91 Lieutenant-General Evstafiev participated in CFE negotiations. In 2000-03 he worked in Russian mission to NATO headquarters in Brussels in charge of WMD nonproliferation and arms control issues. Email address: *evstafiev@pircenter.org*

Fedorov, Yury Yevgenyevich, Associate Fellow, Chatham House – The Royal Institute of International Affairs, London, the U.K.; Member of the *Security Index* editorial board. Graduated from Moscow State University's Physics Department. Candidate of Historical Sciences, Professor. Worked at the Sociological Research Institute of the USSR Academy of Sciences. Headed the section on disarmament issues at the Institute for International Economy and International Relations (IMEMO) of the Russian Academy of Sciences. Worked in the international division of the Soviet Communist Party Central Committee, after which, in 1991, he became deputy head of the political science department at MGIMO. In September 1998 he became section head, and in December 2000 head of the division on military policy research at the RAS U.S. and Canada Institute. In 2001-02 he served as deputy director of the PIR Center. In 2002-03 he was deputy director of the Institute of Applied International Research. Several of his academic studies have focused on energy security, particularly of the Caspian region. He is the author of a monograph entitled *Substrategic Nuclear Weapons and Russian Security Interests* (Moscow: *Nauchnyye zapiski PIR Tsentra*, No. 16, 2001). Fedorov is a member of the *Security Index* editorial board. Email address: *yufedorov@rambler.ru*

Frolov, Andrei Lvovich, independent expert. Born in 1979, Frolov graduated with honors from the St. Petersburg State University Department of International Relations. He received a Russian-French master's degree from the Moscow State Institute of International Relations (MGIMO) in 2003. In 2003-06 he was a research associate at the PIR Center, executive editor of *Yaderny Kontrol* as well as editor of the electronic edition of *Yaderny Kontrol.* He is the author and co-author of the articles "The Transformation of the Export Control System in Russia" (*Yaderny Kontrol*, 2004, No. 4), "Brazil's Nuclear Submarine Development Program: Through Squalls to the Depths" (*Yaderny Kontrol*, 2005, No. 2). His academic interests include: Russian nuclear submarines and prospective Russian and foreign armaments. Email address: *frolov@pircenter.org*

Herd, Graeme P., Course Co-Director, European Training Course in Security Policy, Geneva Center for Security Policy, he is also an Associate Fellow, 'International Security Programme,' Chatham House, London and an Honorary Research Fellow, Department of Politics and International Relations, University of Aberdeen, Scotland. Between 2002-05 he was variously Professor of Civil-Military Relations, Associate Director of the Senior Executive Seminar and Faculty Director of Research at the George C. Marshall European Center for Security Studies, Garmisch-Partenkirchen Germany, where he also was a guest lecturer at the NATO School in Oberammergau. Prior to this he was a Lecturer in International Relations at both the University of Aberdeen (1997-2002) and Staffordshire University (1994-97) and a Projects Officer, Department of War Studies, King's College London (1993-94). His Ph.D. examined the role of Scottish mercenary soldiers in Russia in the 17th Century. He is a resident Faculty Member at the Geneva Centre for Security Policy (GCSP). His latest books are: Graeme Herd & Anne Aldis (eds.), *The Ideological War on Terror: World Wide Strategies for Counter Terrorism* (London: Routledge, Taylor & Francis Group, 2007) and Graeme P. Herd and Tomas Forsberg, *Divided West: European Security and the Transatlantic Relationship* (London: RIIA and Blackwells Publishing Ltd., 2006). Email address: *g.herd@gcsp.ch*

Hofer, Erwin H., Ambassador of Switzerland in Moscow for Russia, Kazakhstan and Turkmenistan. Born in 1949. After graduating from the university of Zurich (in law), he entered the Swiss diplomatic service in 1976, working in the Federal Department of Foreign Affairs (EDA). He served in both Berne and Nairobi. In 1982-87 he was appointed to the Swiss Observer Mission to the UN in New York as Counsellor in charge of legal affairs. In 1987-91 he headed the United National and International Organizations section of the EDA in Berne. In 1991-95 he was a Deputy Head of Mission in Budapest, responsible for economic affairs and in charge of the Swiss Economic Program for Central Europe. From 1996 to 2000 he served as Ambassador, Permanent Representative of Switzerland to the Conference on Disarmament and Head of the Multilateral Division of the Swiss Mission to the United Nations and other

International Organizations in Geneva. In 2000-03 he was Ambassador and Head of Political Division III, United Nations, International Organizations, Culture, and Environment, Federal Department of Foreign Affairs, Berne. In February 2004 he was appointed Ambassador of Switzerland in Moscow for Russia, Kazakhstan and Turkmenistan.

Holgate, Laura, Vice President for Russia/NIS Programs at the Nuclear Threat Initiative (NTI), United States. Born in 1965, in 1987 she received a bachelor's degree in political science from Princeton University and in 1990 a master's of political science from the Massachusetts Institute of Technology. Before coming to work for NTI, she held several major posts in government agencies. She managed the Department of Defense's Cooperative Threat Reduction program, held the position of director of the Office of Fissile Material Disposition in the Department of Energy, and is the recipient of several state awards. She is a member of the Women in International Security executive board.

Hoop Scheffer, Jaap Gijsbert de, NATO Secretary General. Born in 1948, he graduated from the law department of Leiden University in 1974 and was called for army service. After completing his military service, he entered the Ministry of Foreign Affairs of the Netherlands. In 1976-78 he worked in the Dutch embassy in Ghana, and in 1978-80 in the Dutch delegation to NATO in Brussels. In 1980, de Hoop Scheffer became the private secretary to the Minister of Foreign Affairs of the Netherlands and held this office until 1986. In 1986-2002 he served as an elected deputy to the parliament of the Netherlands. In 1987-94 de Hoop Scheffer was a member of the Netherlands parliamentary delegation to the Council of Europe and the Western European Union, and in 1994-97 in the North Atlantic Assembly. In 2002 he was named Minister of Foreign Affairs of the Netherlands. As head of the Dutch foreign policy agency, in 2003 he became the chairman of the Organization for Security and Cooperation in Europe (OSCE). In September 2003 de Hoop Scheffer was elected NATO Secretary General.

Ivanov, Sergei Borisovich, First Deputy Chairman of the Russian Federation Government. Born in 1953. In 1975 graduated from the interpreting department of the Leningrad State University Philological Faculty specializing in English and was invited to work in the state security organs; in 1977, graduated from higher courses of the USSR KGB. In 1981-88 he advanced from superintendent in the USSR KGB First Main Directorate to first deputy chief of a directorate of the Russian Federation Foreign Intelligence Service. He had three lengthy tours of duty abroad to Scandinavian countries and Africa. In 1998-99, he was deputy leader of the Russian Federation FSB [Federal Security Service] Analysis, Forecasting, and Strategic Planning Department. In 1999, appointed Secretary of the Russian Federation Security Council and in 2001 he was appointed RF Minister of Defense. On February 16, 2007 he was appointed the First Deputy Chairman of the Russian Federation Government.

Khlopkov, Anton Viktorovich – PIR Center Executive Director. Born in 1978. In 2001 awarded a Master's degree at the Moscow Engineering Physics Institute (MEPhI). In 2001-02, member of the working group on nonproliferation and export control of the consortium Strengthening the Global Partnership. He is a member of the Institute of International and Strategic Studies (IISS, London) and a member of the Multilateral Study Group on the Establishment of a Ballistic Missile Free Zone in the Middle East/Persian Gulf. Coauthor of the monographs: *Nuclear Nonproliferation in Russian-American Relations: History, Opportunities and Outlook (2000), Cooperation for Global Security (2002); author of the monograph Iran's Nuclear Program in Russian-American Relations (2001)*. His research interest focuses on the regional aspects of nuclear nonproliferation and nuclear energy development. He is a member of the *Security Index* editorial board, and has extensive lecturing experience. He has taught at Russia's top universities, including the Moscow State Institute of International Affairs, Tomsk Polytechnic University, and Nizhni Novgorod State University. Email address: *khlopkov@pircenter.org*

Kiriyenko, Sergei Vladilenovich, Head of the Federal Atomic Energy Agency of the Russian Federation. Born in 1962. After graduation from high school, Kiriyenko enrolled in the shipbuilding faculty at the Nizhny Novgorod (Gorky) Water Transport Engineers Institute. He served as the Prime Minister of Russia from 23 March to 23 August 1998. In 1999 he was elected Russian State Duma. In 2000-05 worked as Presidential Plenipotentiary in Volga Federal District. In 2005 he was appointed to head Rosatom, the Federal Atomic Energy Agency of Russia.

Krasnov, Alexei Borisovich, Head of the Federal Space Agency's Manned Programs Department. He is a corresponding member of the K. E. Tsiolkovsky Academy of Cosmonautics, executive secretary of the Space Committee of the Commission on Economic and Technological Cooperation with the United States. Born in 1959, he graduated from the Electronic Engineering Department of the Moscow Energy Institute with a degree in as an electronic engineer. In 1982 he began working as an engineer for the All-Union Center for Information Problems, and in 1986-1988 he was an engineer at the Mashpriborintorg Foreign Trade Association. In 1987 he graduated from the USSR Ministry of Foreign Trade's Academy of Foreign Trade Advanced Training Department. In 1988-92 he served as third secretary in the Soviet, and then Russian, embassy to the United States, responsible for scientific and technical cooperation in the area of space, among other areas. In 1992 he began working at the Russian Space Agency as a head specialist in the International Division, and in 1993-04 he served as deputy head of the International Cooperation Department. In 1993-00 he was executive secretary of the Space Committee of the Gore Commission for U.S.-Russian Economic and Technological Cooperation, while in 1993-94 he led talks with NASA on the Mir-Shuttle Program. Beginning in 1994, he headed negotations on a Memorandum of Understanding with NASA on the creation of the ISS and was deputy head of the official Russian delegation to the talks on an Intergovernmental Agreement on the ISS. Since 2002 he has been a member of the official Russian delegation involved in multilateral export control mechanisms.

Lavrov, Sergey Viktorovich, Minister of Foreign Affairs of the Russian Federation, Ambassador Extraordinary and Plenipotentiary. Born in 1950. Graduated from the Moscow State Institute of International Relations of the MFA of the USSR in 1972. Began his activity in 1972 at the USSR Embassy in Sri Lanka. Worked in the Department of International Organizations of the MFA of the USSR between 1976 and 1981. From 1981 to 1988 – First Secretary, Councilor and Second Councilor at the Permanent Representation of the USSR to the United Nations. From 1988 to 1990 – deputy head of the Department of International Economic Relations of the MFA of Russia. In 1990-1992 – director of the Department of International Organizations and Global Problems of the MFA of Russia. In 1992-1994 – Deputy Minister of Foreign Affairs of the Russian Federation. From 1994 – Permanent Representative of the Russian Federation to the United Nations. On March 9, 2004 he was appointed the Minister of Foreign Affairs of the Russian Federation. Decorated with state awards.

Loschinin, Valery Vasilievich, Ambassador Extraordinary and Plenipotentiary, Permanent Representative of the Russian Federation to the United Nations Office and other International Organizations in Geneva as well as to the Conference on Disarmament. Born in 1940. In 1964 graduated from the Belarus State University (Minsk) and in 1977 – from the Diplomatic Academy of the Ministry of Foreign Affairs of the USSR (Moscow). Began his diplomatic career in 1965 at the Ministry of Foreign Affairs of Byelorussia; since 1977 has been working at the Ministry of Foreign Affairs of the USSR. In 1989-95 he served as Deputy Permanent Representative of the USSR / Russia to the International Organizations in Geneva. In 1995-96 served as Director of the 2nd European Department, Ministry of Foreign Affairs of the Russian Federation. In 1996 became Ambassador of the Russian Federation to Belarus. In 1999-01 he was a Permanent Representative of the Russian Federation to the International Organizations in Vienna, Austria. In 2001-02 he was Deputy Minister of Foreign Affairs of the Russian Federation and in 2002was appointed as the First Deputy Minister of Foreign Affairs of the Russian Federation. Since 23 January 2006 – Permanent Representative of the Russian Federation to the United Nations Office and other International Organizations in Geneva as well as to the Conference on Disarmament.

Novikov, Mikhail Yuryevich, Deputy Director of the Branch Laboratory on Nuclear Export Controls at the All-Russian Research Institute of Technical Physics (VNIITF) in Snezhinsk. Born in 1960, Novikov graduated from the History Department of Urals State University as a historian/archivist. He has worked at VNIITF, Snezhinsk (formerly VNIIP of the Soviet Medium Machine Building Ministry, Chelyabinsk-70) since 1984. His academic interests include nuclear nonproliferation, export controls, nonproliferation education, and the history of the Soviet "nuclear project." He is the author of several chapters in educational textbooks on nuclear export controls, and participated in the creation of several reference manuals on

nuclear export controls. He has taught in branch institutes of higher education and lectured for specialists in Rosatom enterprises and organizations. Email address: *mnov-2006@yandex.ru*

Obukhov, Alexey Alexandrovich, Ambassador Extraordinary and Plenipotentiary, ambassador-at-large of Ministry of Foreign Affairs of the Russian Federation, Chairman of the Russian Delegation to the Joint Russian-Lithuanian Commission on demarcation. Born in 1937. In 1961 graduated from Moscow State Institute of International Relations and in 1965 received a PhD in the same institute. Since 1966, Dr. Obukhov has served in the Ministry of Foreign Affairs of the USSR/the Russian Federation. In 1969-91 took part in the U.S.-Soviet negotiations on strategic arms. In 1987 was a Deputy Chairman on nuclear space weapons. In 1989-92 he was Deputy Minister of Foreign Affairs, in 1992-96 he was Ambassador of Russia to Denmark. Email address: *moscowsuper@mtu-net.ru*

Orlov, Vladimir Andreevich, the founder and President of the PIR Center - *Center for Policy Studies (Russia)*, Editor-in-Chief of the *Security Index* Journal, and Co-Director of the European Training Course in Security Policy at the *Geneva Centre for Security Policy* (GCSP). He is the President of the *Centre russe d'études politiques, Genève*. Dr. Orlov is a member of the Public Board at the Ministry of Defense of the Russian Federation. He is the Chairman of the *Trialogue* Club. Vladimir A. Orlov was born in 1968 in Moscow, Russia. He graduated from the Russian Foreign Ministry's Moscow State Institute of International Affairs (MGIMO). In 2001-02 he served as a U.N. consultant on disarmament and nonproliferation education by the appointment of the U.N. Secretary General. Dr. Orlov regularly publishes his views in Russian and foreign periodicals and has edited more than a dozen books on international security issues, published both in Russia and abroad. Dr. Orlov continues to teach on a regular basis, giving lectures on Russian foreign policy and WMD nonproliferation. Email address: *orlov@pircenter.org*

Ponomarev-Stepnoi, Nikolai Nikolaevich, Vice-President of Russian Research Center *Kurchatov Institute*, Academician, PIR Center Advisory Board Member. Doctor of Technical Science, Professor, nuclear physicist, a leading world specialist in nuclear power units. Born in 1928. In 1952 graduated from Moscow Institute of Engineering Physics. Since 1952 works in Russian Research Center *Kurchatov Institute*. Editor-in-chief of the journal *Atomnaya Energiya*. Member of the editorial board of the journal *Nuclear Science and Engineering*. Chairman of the research council for atomic energy of the Russian Academy of Sciences. Member of the research council of the RF Ministry of Atomic Energy.

Sargsyan, Gagik, researcher at Geneva Centre for Security Policy. Born in 1982, in 2004 he obtained BA degree in Political Science from Sorbonne University (Paris-1-Panthйon) and MA degree in International History and Politics from Geneva Graduate Institute of International Studies in 2006. In 2006 joined Geneva Centre for Security Policy. Accepted for a Phd in Political Science, University of Ottawa, Canada, starting date fall 2007. His research interests are Russia and former USSR states, Caucasus history and historiography, Migration, Diaspora, ethnic conflicts and nationalism. Email address: *gagik_sargsyan@yahoo.com*

Sobolev, Valentin Alekseevich, Colonel-General, Acting Secretary of the Security Council of the Russian Federation. Born in 1947. In 1969 graduated from Moscow construction engineering institute and in 1974 from High school of the Committee of the State Security. From 1972 to 1999 served in Government. In 1994-1999 worked as Deputy, First Deputy of Director of FSB – Federal Security Service of Russia. From 1999 – Deputy Secretary of the National Security Council of the Russian Federation. In July 2007 was appointed as Temporary acting Secretary of the Security Council of the Russian Federation. Member of the Academy for Security, Defense and Law enforcement problems, Professor. Awarded State orders

Timerbaev, Roland Mikhailovich, PIR Center Executive Board Chairman, Ambassador Extraordinary and Plenipotentiary. Born in 1927. He is a Russian leading expert in the sphere of nonproliferation and arms control, is world-renowned as one of the authors of the Nuclear Non-Proliferation Treaty (NPT) – the cornerstone of the nonproliferation regime. After graduating from the Moscow State Institute of International Relations (MGIMO) in 1949, Roland Timerbaev dedicated over 40 years to the diplomatic service, first in the Soviet Foreign Ministry and then the Russian Foreign Ministry, retiring in 1992 from the post of Permanent

Representative of the Soviet and Russian Missions to International Organizations in Vienna. He actively participated in drafting several key international agreements in the nuclear sphere, including the Anti-Ballistic Missile Treaty, the U.S.-Soviet Agreement on Measures to Reduce the Nuclear War Threat, the IAEA safeguards system, the Threshold Test Ban Treaty, and the Peaceful Nuclear Explosion Treaty. In 1974-1978 he participated in the work to establish the Nuclear Suppliers Group. He has also taken part in six NPT Review Conferences. Professor Timerbaev has a doctorate in history, and has broad academic and teaching experience both at leading Russian institutions (Moscow State Institute of International Relations, Moscow Engineering and Physics Institute) and abroad (in particular, at the Monterey Institute of International Studies). His works include *The Peaceful Atom in the International Arena* (1969), *Verification of Arms Control and Disarmament* (1983), *The Complete Prohibition of Nuclear Tests* (1986), *Russia and Nuclear Nonproliferation*, 1945-1968 (1999), *International Monitoring of Atomic Energy* (2003), and *The Current Status of the Nuclear Nonproliferation Regime and its Prospects: Towards the Upcoming 2005 NPT Review Conference* (2004). Email address: *timerbaev@pircenter.org*

Torkunov, Anatoly Vasilyevich, Rector of the Moscow State Institute of International Relations (MGIMO-University) of the Ministry of Foreign Affairs of the Russian federation, Ambassador Extraordinary and Plenipotentiary, Doctor of Political Sciences, Professor, Corresponding Member of Russian Academy of Sciences. Born in 1950. In 1972 received degree in political science, Moscow State Institute of International Relations (now MGIMO-Univ.) under the Ministry of Foreign Affairs of the USSR. In 1972-73 took diplomatic work at the USSR Embassy in People's Democratic Republic of Korea In1974-80 – assistant rector and dean for work with foreign students, Moscow State Institute of International Relations (MGIMO); in 1981-83, pro-rector for international liaisons, same institute. From 1983 till 1986 chargedd as first secretary of the USSR Embassy in the United States. In 1986-19992 – consecutively, senior researcher, then dean of Faculty of International Relations and first pro-rector, Moscow State Institute of International Relations. Since 1992 Dr. Torkunov is of rector, MGIMO-Univ.; editorial board member of journals "Mezhdunarodnaya Zhizn" (International Life), "Moskovsky Zhurnal Mezhdunarodnogo Prava" (Moscow Journal of International Law), "Global Governance", US; member of National Committee on UNESCO Affairs. Also member of different organizations: Attestation Collegium of the Ministry of Higher Education; Collegium, Ministry of Foreign Affairs; Russian Academy of Natural Sciences; Academy of Social Sciences; Academy of Military Science; International Academy of Higher Education. Chairman of.Russian UN Association (since 1998); president of Russian International Studies Association (since 1999) and Russian UN Association.

Trenin, Dmitri Vitalevich, chairman of the Carnegie Moscow Center Research Council and a senior associate at the Carnegie Endowment for International Peace (Washington). He was born in 1955 in Moscow. He served in the armed forces from 1972 to 1993, and graduated from the Soviet Ministry of Defense Military Institute in 1977. He did his military service both in Moscow and abroad, including as a member of the group of military experts in Iraq (1975-76), in the division of external relations of the Group of Soviet Forces in Germany (1978-83), and in the U.S.-Soviet negotiations on nuclear and space weapons in Geneva (1985-91). In 1993, he became the first Russian officer to receive a Fellowship at the NATO Defense College in Rome. He has taught at the Military Institute (1983-93) and Brussels University (1993-94); has given classes at Moscow State University, Stanford University (United States), and the Institute for Advanced Studies in Lucca (Italy). In 1993-97 he was a senior research associate at the Russian Academy of Sciences' Institute of Europe. Since 1994 he has worked at the Carnegie Moscow Center. Trenin is the author of more than 10 books, published in Russia, the United States, and western Europe. They include: *Integration and Identity: Russia as a New West* (2006), *The South's Time: Russia in Chechnya, Chechnya in Russia* (coauthor, 2004), *The End of Eurasia: Russia between Geopolitics and Globalization* (2001), *Russia's China Problem* (1998), and *The Baltic Chance* (1997). Books Trenin has edited include: *The Russian Military: Power and Politics* (2005), *Russia and the Main European Security Institutions: Entering the 21st Century* (2000); and *Kosovo: The Crisis' International Aspects* (1999). Trenin's articles have been published in leading Russian newspapers and journals, as well as abroad. He is a member of the International Institute for Strategic Studies (London), Russian Association for International Research, the consultative committee for the journal *Pro et Contra*, the editorial

board of the journal *International Politics*, and the PIR Center Research Council. Email address: *dmitri@carnegie.ru*

Tsygichko, Vitali Nikolaevich, doctor of technical sciences, professor, full member of the Russian Academy of Natural Sciences, senior research associate at the Russian Academy of Sciences' Institute of Systems Analysis. Born in 1933, in 1961 he graduated from the Dzerzhinsky Military Academy, and in 1966 he defended his candidate's dissertation. He worked in the central scientific research institute of the Soviet Ministry of Defense from 1967. In 1976 he defended his doctoral dissertation. Tsygichko holds the rank of colonel, retired. In 1985-88 he worked in the Russian Academy of Sciences' Institute of Systems Analysis, and in 1988-91 headed the independent Center for Research on National Security Problems. He worked at the Massachusetts Institute of Technology (USA) in 1992-93, heading the international program Supporting Decisions in the Area of International Security and Strategic Stability. From 1995-2001 he served as an expert for the International Affairs Committee of the Russian Federation Council. At present he is an expert on information security for the Russian Foreign Ministry. His academic interests include methodological approaches to mathematical modeling of socioeconomic processes, decision-making theory, applied systems analysis of theories and methods of socioeconomic forecasting, national security and strategic stability issues, information security, and geopolitics. He is the author of six monographs and over 200 articles. Email address: *vtsygichko@inbox.ru*

Zrodnikov, Anatoly Vasilievich, Director General of the State Scientific Center of the Russian Federation Institute for Physics and Power Engineering (IPPE) in Obninsk, Russia. Born in 1944, Anatoly Zrodnikov joined the IPPE in 1969 after graduation from the Moscow Power Engineering Institute (Technical University) with M.S. in Applied Physics and served in various positions. The fields of his scientific interest are nuclear power, including space applications, fast neutron reactors, nuclear pumped lasers, plasma physics, perturbation theory. Prof. Zrodnikov is the President of the Russian Nuclear Society, a member of the Editorial Boards of journals Laser and Particle Beams, Cambridge University Press, and Atomic Energy, Moscow.

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