CHAPTER 2

THE FOUNDATIONS OF RUSSIAN STRATEGIC POWER AND CAPABILITIES

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INTRODUCTION

Will the availability and quality of Russian strategic capabilities increase or decline over the next 2 decades and, whichever result, why? Conventional wisdom has it that Russia's strategic capabilities will either grow or remain intolerably high over the next 2 decades, yet there are some reasons to believe that the human expertise and capital assets related to strategic weapons may decline. Given current economic trends, Russia's military forces and production surge capabilities should be able to approach the quality and quantity enjoyed by the Soviets during the late 1980s. Moscow, however, would like to modernize its nuclear forces, dual-use information systems, and advanced conventional weapons and also invest in new weapon systems such as direct energy weapons, lasers, microwave radiation emitters, particle beam generators, and mass plasma weapons. The problem is how to pay for this. Certainly, Russia's military budget will not be able to carry these programs, even if Russian President Vladimir Putin's recently proposed economic and defense reforms are successful.[1] Thus the only way Russia can achieve its military ambitions is to secure and maintain substantial new sources of foreign financial investment and technical cooperation.

This chapter has three sections. The first describes how the Russian military plans to modernize its existing nuclear forces and acquire new strategic weapons capabilities by increasing central control over the defense industry and expanding Russia's influence in the former Soviet Union. The second section identifies the two major obstacles to that plan—the economic crisis and the steady decline in the numbers of Russian scientists. Section three illustrates that the Russian elite understand these problems and are trying to overcome them by relying on arms sales, space launches, the Cooperative Threat Reduction Program (CTR), and other foreign capital flows to fund Russia's acquisition of strategic capabilities. This chapter concludes that Russia's current path can only lead to failure, and how far they progress is dependent on how far other countries are willing to finance them.

WHAT STRATEGIC CAPABILITIES RUSSIA WANTS AND HOW IT PLANS TO ACQUIRE THEM

Russia's Wish List.

To understand what strategic weapons capabilities the Russian military wants to acquire over the next 20 years, we must first understand what the Russian military defines as strategic. When one thinks of strategic weapons, the first thing that comes to mind is submarine- or land-launched long-range ballistic missiles armed with nuclear weapons. But the writings of many Russian observers plus evidence from Russian exercises such as *ZAPAD-99* indicate that, in the Russian view, tactical nuclear weapons (TNW) can do strategic duty by bringing about Russian control of any intra-war escalation, thus forcing the North Atlantic Treaty Organization (NATO) to negotiate on the basis of the status quo ante and cease military operations. Since Kosovo, the volume of official writing endorsing heavier reliance on such nuclear weapons has only increased.[2]

Similarly, many leading Russian military thinkers argue that information weapons and information warfare

(IW) can achieve strategic outcomes. They see IW as a strategic threat comparable to nuclear weapons in their functional outcome.[3] Here IW and/or various forms of electromagnetic warfare in general become a potentially self-sufficient operation in their own right. For example, retired General M. A. Gareyev, President of the Academy of Military Sciences and the dean of Russian military thought, believes IW capabilities could by themselves achieve a definite strategic goal.

Future wars could be fought without even resorting to force, purely by informational and electronic means. In fact, the cataclysm culminating in the collapse of the Soviet empire and the Soviet Union illustrates that states and coalitions can disintegrate as a result of confrontation on the international arena without the direct application of force.[4]

Another nonnuclear capability that could have strategic impact is advanced conventional weapons (ACW). These, according to many Russian thinkers, if targeted on key strategic targets like command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems, nuclear power plants, or nuclear weapons silos can, by purely conventional means, effectuate decisive strategic outcomes. Consequently, such ACW attacks upon conventional targets might justify a first-strike nuclear response.[5] That guidance was expanded to lower the threshold for nuclear use and apparently remains operative in the 2000 defense doctrine, largely due to NATO's campaign in Kosovo.[6]

Russian military thinkers also believe that integrated space technologies relevant to projecting power for naval and land operations constitute a strategic weapons capability that Russia must acquire.[7] These writers optimistically emphasize that Russian submarines and aircraft can already launch global monitoring satellites. Space will become the high ground whose possession offers potentially decisive strategic benefits and advantages. They

also point out that recent technological trends plus the revenues accruing to Russia from projects like the International Space Station (ISS) indicate that funding for at least some of those capabilities is available **as long as Russia participates in foreign operations like the ISS.**[8] On the other hand, these writers are concerned that U.S. missile defenses will trigger an arms race whereby control of space and thus anti-space weapons from nonspace platforms, e.g., land-based anti-satellite weapons (ASATs), become weapons endowed with potential strategic significance.

How Russian Military Planners Intend to Acquire Capabilities.

Although a new cycle of reforms has just been announced in military policy, we cannot categorically state that they can or will be implemented or that they will seriously address Russia's basic strategic dilemmas. Indeed, for the last 3 or 4 years, it has been almost impossible to discern any consistently implemented threat assessment and defense policy. As a reporter for *Segodnya* observed in August 2000,

> The blatant incompatibility of the defense minister and the Chief of the General Staff confirms that we have no united military leadership and that none of the key defense documents (military doctrine, national security concept) has any practical value, because they do not express a consolidated view on military organizational development.[9]

What is more important to understanding Russia's military future, however, is not how coherent its military planning might be, but that it no longer has the means to unilaterally provide for its own defense. In fact, it cannot support its military industrial structure without large-scale foreign subsidies and transfers. In this sense, Russian security depends quite literally on the kindness of strangers. Whether these transfers originate in arms sales, foreign subsidies through programs like the Nunn-Lugar CTR, foreign fees for space launches using Russian and Soviet missiles, or joint production with foreign producers,

they alone allow Moscow to supplement its budgeted and extra-budgetary defense programs and maintain the current defense economy.

The paucity of available domestic resources and the absence of a state capacity rule out a Stalinist-like autarkic defense sector. Given available resources, Russia can only be "a great power" or global power on the basis of other states' sufferance. Therefore, to compete militarily and politically Russia must find allies and friends on each individual issue in international security.[10] This search for alliances is as true for defense economic policy, weapons sales in Asia and Europe, and the search for joint projects in aerospace and defense procurement contracts with the West, as it is for foreign and national security policy.

Russia therefore openly seeks to generate maximum foreign collaboration to develop its strategic capabilities. Its objectives are transparent. It aims to win contracts to create a basis to solidify its position abroad while creating a basis for joint production of conventional or strategic systems. Moscow also seeks political leverage within those areas and access to higher levels of technological capability, particularly in Western Europe, through either the rather nebulous proposal for a "nonstrategic" European-Russian missile defense or joint ventures with European defense firms.[11]

Russia also pursues an exclusive sphere of influence within Confederation of Independent States (CIS) economies through defense-economic integration, e.g., with Ukraine, Belarus, and Kyrgyzstan. Reintegrating the former Soviet defense industrial network offers Moscow access to capabilities that had been lost with the breakup of the Soviet Union. Foreign subsidy and arms sales programs also let the government circumvent unwelcome scrutiny of the true extent of military spending and the defense economy. That scrutiny would likely force further retrenchment and result in less foreign subsidization in an effort to make the government accountable to the people

and force it to live within its real means. Earlier trends to reduce the opacity of the budget to the Duma have been reversed, and Putin's recent call to reduce the budget approval process to a formality and establish an authoritarian police state in Russia have become quite evident.[12]

The excessively large defense industrial complex testifies to the authorities' failure to properly align Russia's threat assessment with available strategic resources. Retention of this excessively large sector demonstrates the continuing failure of defense and economic reform, a continuing flight from strategic reality that jeopardizes the military and any hope for a true democratic future. Meanwhile, its perpetuation ensures Russia's continuing poverty and isolation abroad despite the terrifying socio-economic challenges confronting it. Speaking about prospective nuclear forces, Dr. Nikolai Sokov observed that,

> Essentially, today only economic constraints continue to operate, and they appear a relatively weak variable. There is strong belief that a stronger government which is oriented toward national interest rather than more universal goals of democracy, market, and integration into the international community, could generate economic growth and yield resources, including for defense spending. Whether this belief is correct or not does not matter much under the current conditions. The powerful mayor of Moscow, Yuri Luzhkov, has already demonstrated that there is at least a theoretical possibility to combine market with an authoritarian regime and that such a combination could generate money. The fact that he was able to spend some money from the city budget to finance arms acquisition serves as proof in the eyes of the military leadership and the defense industry that economic constraints are not insurmountable.[13]

This neo-Soviet approach also suggests that arms sales are surrogates for reform in order to keep this system afloat. Putin's defense of this neo-Soviet outlook and policy implied as much:

> The unique peculiarity of military-technical cooperation is that it lies where several important areas meet international activities in general, military-political work both inside the country and abroad, and trade and economy. . . . Judging from the volumes that military-technical

> cooperation gives to the country's budget, this is one of the most important areas for us. . . . It is common knowledge that the export of weapons and military hardware earns the budget considerable sums in currency. These means allow us to maintain cooperation between science and industry in the country, preserve the scientific and industrial potential, and keep personnel at defense enterprises.[14]

Although General Thomas Wilson, Director of the U.S. Defense Intelligence Agency, testified that, absent a total collapse of state power, he cannot imagine a non-nuclear Russia in 2015, several Russian and even foreign analysts fear just such a collapse.[15] Yet Russia still spends far too much on its armed forces, and the return on the investment appears to be quite low relative to other peer competitors. One thing is thus clear: if Russia attempts to acquire the strategic capabilities it wants, it will need help from other nations.

THE OBSTACLES TO RUSSIA'S REALIZING ITS STRATEGIC WEAPONS ACQUISITION AMBITIONS

Russia's Lack of Money.

Not only is economic growth slowing amidst widespread predictions of a crunch by or in 2003 as foreign debt rises, but capital outflow remains an estimated $20 billion a year, indicating a continuing lack of domestic confidence in Russia's prospects. That outflow and lack of confidence severely impede efforts toward civilian or military scientific and technological progress through 2020. The economy's high-tech component is severely stressed from the lack of investment and accelerating decline since the time of former Soviet First Secretary Nikita Khrushchev. There also are serious dysfunctional trends throughout the high-tech and electronic sectors of civilian and defense industry. Finally, beyond Russian science's structural defects, the state, too strong to permit autonomous market-driven change in defense industry and too weak to implement effective statist controls, has increased its presence in the defense industry and will likely be overwhelmed by its incapacity to make its

policies work. Absent a coherent growth strategy, plus military and defense spending reforms, Russia cannot produce the desired increases in quality, quantity, and availability of all forms of military power.

Apart from its heavy defense burden, Russia has $48 billion in foreign debts coming due between now and 2003. Moreover, it must spend enormous sums to retrieve the health, ecology, and demographic potential of the country in order to be a major regional power, let alone a global player.

Putin understands some of this dilemma and recently observed that the foreign debt burden makes it unclear whether Russia can find "enough money for education, defense, health care, space, and science under such gloomy conditions."[16] However, those are precisely the areas that must be built up under conditions of fiscal and capital shortage in an economy, 40 percent of whose state revenues apparently come from "rents" on oil and gas exports, even as production of those commodities declines.[17] Nor are the resources to reverse that decline to be available soon. The cumulative decline of the infrastructure and capital stock, as well as the shortage of domestic and foreign investment capital, cripples efforts to develop an autonomous civilian high-tech sector.[18] Though Russia largely retains the Soviet capital stock, it is usable only autarkically, not as part of a world economy despite favorable exchange rates since 1998. Therefore Russian exports remain uncompetitive except for energy and some defense sectors. Since this lopsided, even neo-colonial structure of trade goes back years, it is not surprising that the defense industry and its spokesmen quickly realized that, in post-Soviet conditions, arms exports were their only salvation as well as an obstacle to the true marketization of the economy which would force them to reform and become even more competitive.[19]

Russia's Shrinking Pool of Scientifically Trained Personnel.

In addition to not having enough money to develop the strategic weapons capabilities it wants, Russia's pool of scientifically trained personnel is shrinking. The decades-long decline, lack of opportunity, and paucity of investment have put Russian science on the brink of a catastrophe. As of February 2001, about 4,000 organizations deal with scientific research but obtain only about 16 percent of the financing available in 1990. Russia spends on researchers 4 percent of other developed nations' expenditures. The average life expectancy for a Russian male is 59. The average age of a Russian researcher is approaching 60, and few young people join scientific organizations because of the poor pay. Such younger people make up only 11 percent of those engaged in fundamental scientific research.[20]

Meanwhile a brain drain steadily erodes Russian science. This drain takes many forms: 75 percent of world-class mathematicians and 50 percent of physicists have emigrated; many scientists now work on foreign contracts or for foreign-owned firms; many sell patents and designs, including those for sophisticated military systems, abroad. Indeed, this huge outflow and diversion of scientists threaten Russia's security and independence. In all, 85 percent of Russian doctors of science are working abroad.[21] The number of scientists as of 1997 had fallen to 1.3 million, and by 2000 to 910,000, with at least 10 percent of those actively seeking to go abroad. Although Russian scientists, especially programmers, are in demand abroad, their activity in Russia is limited by obstructions facing business and science which must be removed for science to flourish.[22]

These trends also exist in key military installations like the closed missile cities. Although the desire to emigrate is not as high as was feared, demoralization is widespread and high enough to be alarming. Ever more scientists make ends meet primarily from moonlighting for other organizations

that can pay. Fewer and fewer specialists are being educated at the best centers in Moscow. As opportunities decline and assignment to closed cities is no longer feasible, those cities can replenish their labor force only from within. All these trends point to a decreasing capability to provide ever more sophisticated future missile and nuclear systems.[23]

Although Putin has announced measures to promote and retain scientists, especially in the defense sector, the trends are not promising.[24] Neither are they encouraging for the future due to shortages of funding for education and a decade or more of misplaced priorities. The "internal and external brain drain" obstructs Russia's full exploitation of the current technological revolution.[25]

Barring a major reversal of trends, Russia, between 2010 and 2020, could lose the capability to keep pace with advanced Western and Asian countries (Japan, India, and China) in defense technologies. This does not mean Russia will be unable to field a reasonably robust strategic force consisting of weapons based on new physical principles, space and informational weapons, chemical and biological weapons, and a large tactical and strategic nuclear deterrent, the latter consisting primarily of some 750-1,000 land-based intercontinental ballistic missiles (ICBM). Nor does it preclude an ability to wage at least some forms of IW.

What it does mean is that the ability to produce sufficient ACWs; precision-guided munitions (PGM); and space, informational, and high-tech systems using advanced information, bio-technology, and electronics will be severely though not totally constricted. Russia's mobilization base will remain severely inhibited relative to past capabilities. Hence Russia's capacity to wage sustained war in any of these domains could fall below its current level. Still, Russia retains a strong capacity for waging IW against American targets.[26]

This analysis suggests that, despite high military spending, the unlikelihood of major structural reform in the

government, economy, and military, and the continuing war in Chechnya will prevent Russia from soon deploying what its rulers believe are sufficient conventional forces to defend and advance its interests. Given the concurrent demographic challenge, the reliance on both strategic and tactical nuclear weapons and/or on a relatively small number of ACWs and information systems comparable to them could continue to dominate defense policy in practice, despite official proclamations and even spending to the contrary.

Russian military thinkers recognize these difficulties and discuss three different possibilities for surmounting them. The first is a massive increase in foreign support through arms purchases or subsidies. The second is a major domestic economic-technological breakthrough resulting from broad economic-political reform. The third is a major, albeit limited, breakthrough in the defense industrial sector that will generate tremendous returns in the civilian sector over time. Each of these possibilities is unlikely to succeed. Trying to secure a massive increase in foreign support through arms purchases or subsidies ignores how difficult it will be to upgrade Russia's decrepit infrastructure without Western and American support. But some officials now advocate an openly anti-American policy of military sales to America's enemies, a policy whose overtness can only increase external economic pressures on funding sources, while not appreciably increasing arms sales revenues.[27]

So far as a major domestic economic-technological breakthrough due to broad economic-political reform is concerned, this, too, seems unlikely to succeed because the government is retreating from democratization and transparency, restricting the free exchange of information and taking control of the Internet. The various moves towards police-state repression, like legislation to control the Internet, argue against a decisive breakthrough to an information society and information-era military.[28] These actions also herald an autarkic development pattern that is

quite contradictory to contemporary requirements and will produce further obstacles to reform.

Finally, there is the third alternative, a major but limited breakthrough in the defense industrial sector that will generate enormous returns in the civilian sector over time. This appears to be the preferred path of the current government and fits with its statist outlook, to include economic planning and control. Unfortunately, this is a move backwards, because today's revolution in military affairs, contrary to Russian elite thinking, has been largely spawned by new civilian technologies and companies. Therefore, this line of action seems wrongheaded from the start and will not produce lasting benefit.

HOW RUSSIA THINKS IT CAN SQUARE THE CIRCLE

Spend More.

Faced with all these challenges, Russia's military planners have reverted to old solutions. One is to increase funding to a more centralized defense industry, and the other is to increase foreign capital flows by exporting more arms.

Russia's defense sector is still too large. In 1999 the government exceeded the annual budgetary figures on defense and spent another 56.8 million rubles on domestic security. That figure also exceeded the stipulated budget. This suggests the extent of the burden on state finances wherein defense spending already consumes between 20 and 25 percent of the official budget, not counting the extra-budgetary spending defense receives.

Yet, even with these measures there is never enough. The related military and industrial constituencies are now actually getting 5 percent of the annual gross domestic product (GDP), not just the 3.5 percent that Boris Yeltsin had promised when he was president. This percentage will likely increase as the economy grows, and the Chechen war

continues. Stated military requests continue to exist in the realm of illusion. To sustain future programs, the government has indulged in its own fantasies by raising the defense budgets annually since 1998. For 2001 it raised official spending on research and development (R&D) by 43 percent and cut procurement by 13 percent. This reflects the commitment to rely temporarily on nuclear deterrence, even as missiles go gradually out of service and are replaced at the rate of 10 ICBMs (mobile SS-27s or *Topol-Ms*) per year.[29] All the military spending in 2000-2001 added to the original draft budget for 2001 totals over 50 percent of the original draft.[30]

Hence, there is a direct linkage to the crisis in science and technology. Science Minister Alexander Dondukov observed that most of the industrial growth in 2000, about 10 percent, was due to high-tech branches.

In March 2001, Alexander Roubtsov observed that the defense industry still includes about 1,700 plants and a labor force of 3.5 million. With families, this comprises about 10 percent of Russia's total population and embraces all of Russia's territory. There are still over 70 factory cities and restricted administrative-territorial entities totally dependent on the defense industry. Since these institutions remit taxes to regional and provincial leaders, they worry that any marketization will lead many of them, which are generally noncompetitive, to close down, face high unemployment, or lose revenues. Those factories placed under central control will now pay taxes to Moscow, not to the regions. Thus the projected reform of defense industry is also part of Putin's overall centralization plan.[31] Meanwhile defense production is about 6 percent of the 1991 level.[32] Therefore, Dondukov et al. push arms sales and technology transfer wherever possible regardless of international agreements. Yet, while policy now focuses on upgrading existing equipment, some firms either want to produce utterly new weapons that cannot be bought, or are simply waiting for orders from Moscow without any conception of a market system.[33]

This suggests that if Russia follows Putin's course through 2020, it can, given the preservation of the Soviet capital stock and possible added value from the CIS and foreign subsidies, approach the Soviet level of conventional weapons. But given the attrition and qualitative decline of capital and labor assets in the scientific and military sectors, that is the best that can be hoped for from the surviving shell of Russia's nonmarketized defense economy.[34] Despite higher investment due to moderate growth and high energy prices, Russia will probably remain 30 years behind the West in applied technology. There will be pockets of excellence but not a truly competitive military machine.[35]

Use Budgetary Tricks.

To fund this program, more extra-budgetary tricks will be used.[36] The goals of such strategems in helping the defense and science sector are quite transparent. Deputy Prime Minister Ilya Klebanov, who supervises defense industry and arms sales, stated that the government will spend 135 percent of what it did in 2000 on defense contracts through 2010 and give priority to new fifth-generation aircraft and air defenses, tanks, and ships. These systems include new sea-launched strategic missiles, cruise missiles, a fifth-generation fighter jet, and new infantry fighting vehicles, tanks, and armored personnel carriers. Until these "wonder weapons" are ready (and bearing in mind that this funding excludes weapons based on new physical principles, information weapons, command, control, and communication and intelligence [C3I] systems, nuclear weapons, etc.), the armed forces will have to rely on upgrades to existing equipment.[37]

Obtaining all these new capabilities would entail recentralizing state power and unifying defense industries under virtually monopolistic state ownership. Animating this program is the key players' neo-Stalinist ideology that defense industry is the locomotive of recovery. This is hardly

surprising since most high-tech research originates there. Deputy Defense Minister Nikolai Mikhailov stated that since the military are regular consumers of science and technology (S&T) products, they can fulfill any combat mission using those systems "only in the event of the maximum and effective use of the potential of domestic science, engineering, and economy. I emphasize domestic."[38] Accordingly, this sector is the permanently operating catalyst of technological recovery whose role in the development of new technologies is worldwide. This utterly false and misleading idea is belied by global economic reality.[39] Since Russia globally lags in computers and technology exports, and risks falling even further behind, Mikhailov outlined a comprehensive program of military-technological modernization designed to bring Russia back to a competitive level in 5-7 years.[40]

Mikhailov outlined key areas for Russia in which it must compete given the rising American threat. These include space and missile engineering to build *Topol-Ms*, missile defenses, a new generation of space apparatuses "for various targeting procedures," aeronautical engineering for new fighter planes, antiair and air defense engineering, 4th and 5th generation submarine missile cruisers, heavy aircraft-carrying cruisers, precision guided missiles, tanks, command and control systems for ground forces, domestically built highly integrated microprocessors, super-computers, and neuroprocessors, etc.

To obtain these systems, Putin has reconcentrated arms sales and defense industry under his control, supposedly to maximize revenues. To raise exports he has merged Russia's arms exporters into one group under his direct authority. That group will also force central control of all intergovernmental military-technical commissions, except those for China and India which Klebanov controls, and will issue licenses for foreign exports. This will supposedly force many smaller or noncompetitive plants to concentrate resources and production and create truly marketable products. Putin also decreed cuts of over 600,000 mostly

administrative jobs in defense industry through 2006, possibly closing factories and even whole design groups. The aerospace and shipbuilding industries in particular are supposed to be drastically concentrated into state-controlled holding companies.[41]

By August 2000, observers had already seen that this plan essentially returned to the Soviet model.[42] Vitaly Shlykov, one of Russia's foremost experts in defense economics and a scathing critic of the system, noted that the arms sales program is a Ponzi scheme, since Russia is selling weapons it cannot yet produce and using revenues obtained from preliminary agreements on them to finance that production.[43] The system is so broken that, at best, it produced only 10 percent of Soviet defense output in 1991. Ninety percent of the 1,700 defense firms have no orders and could not fulfill them if they received them, and subcontractors have lost interest in dealing with the system. Whereas 800,000 people work in aviation and aerospace in Russia, compared with 98,000 in Europe, Europe's production is more efficient, and its volume is greater. Russian military hardware's real costs are so high that they approach Western costs. Given the low quality of production and workmanship, Russia is actually at a disadvantage. While the few producers and exporters who have been privatized are profiting and finding a way in the market, Klebanov and Putin are nationalizing the defense industry. By restoring the Soviet model, Moscow almost certainly ensures the system's ultimate failure. Conventional and nuclear missile branches (since the latter are to be severely cut) will break down and the Russian Ministry of Defense (MOD) will have to finance the entire rearmament out of its own budget.[44]

The Poverty of Budgetary Tricks and Selling Arms.

Spending and budgetary tricks and foreign arms sales will not be able to fully fund Russia's strategic weapons acquisition ambitions. The key reason is that they currently

are spending more than they can afford, and their plans would have them spending even more. We can estimate the extent of defense spending and its likely direction to 2020. First, assumptions of massive reductions in Russian defense spending since 1991 are unduly optimistic. At least some analysts believe that total current Russian spending on its armed forces, including spending by regional and local governments to maintain the military (which is much greater than the published budgetary figures), approximates (as of 2000) the expense burden of the military upon the economy during Soviet times.[45]

Second, the armed forces and defense industry survive on the basis of hidden or unreported noncash and/or extrabudgetary subsidies. This opacity extends as well to the armed forces which cannot even keep track of their own expenses. Spending by the armed forces, therefore, includes not just the debts owed to the MOD since 1992, but also the debts owed by the armed forces for procurement that is not paid for.

Third, military spending remains much greater than assumed in the West. Christopher Hill of the United Kingdom's Ministry of Defence estimates that actual spending in 2000 was 143 billion rubles, rising significantly from 1999, with the official defense budget amounting to little more than half of true defense spending.[46] Based upon computations in constant 2000 prices, he and MOD argue that defense spending fell from $130 billion in 1992 to $42 billion in 1998. In 2000, however, Putin increased the official budget outlays by 50 percent, and at least some aspects of R&D by 80 percent.[47] Since then, defense spending has risen to $50 billion in constant 2000 prices. Also in 2000, the trend towards increased funding for strategic forces, influenced by then Minister of Defense Igor Sergeyev, apparently gave way under pressure from Chief of Staff General Anatoly Kvashnin and others to more funding of the regular conventional forces, procurement, and R&D on new higher-tech systems. Recently it was announced that the government intends to impose an even

50-50 ratio by 2011. Hill's figures are roughly confirmed by the International Institute for Strategic Studies (IISS) in London, which assumes total defense spending of $57 billion.[48]

Notwithstanding continued growth, the most likely major sources of underwriting for those rising outlays are arms sales and joint projects with other states. Many industry insiders and observers believe that only this "transnational" integration with foreign clients keeps this industry going.[49]

Hill argues that, however one slices this cake, it cannot lead to a massive resurgence of military power. Indeed, the numbers of troops will be slashed, and demography is pushing Moscow towards a professional army though its officers viscerally reject the idea and show no understanding of what that means.[50] Force structures will be transformed, too, with armored vehicles, tanks, combat aircraft, and major naval platforms likely to be cut by a third.[51] Furthermore, spending on current procurement is largely restricted to upgrading existing weapons and reorienting R&D funds toward the next generation of systems or entirely new kinds of weapons, while squeezing every drop of deterrence out of the existing nuclear systems.[52] New systems are going abroad, not to Russian forces, to sustain defense industry until a reduced military can actually buy enough weapons.

These figures entail a reduced nuclear force and lower rates of production of new generations of nuclear weapons. They also suggest that Moscow is stressing current R&D of high-tech combat aircraft and electronic, control, and information systems, and weapons based on new physical principles and the use of TNWs in conventional conflicts. Though estimates of the future size of the nuclear forces vary greatly, undoubtedly Moscow can sustain a land and sea dyad, or perhaps a triad with a small aerial leg of 750-1,000 missiles as a minimum, more than enough to guarantee a second-strike capability by 2015. General Staff

analysts also say that, as of 2007, Russia will still have some 3,000 tactical nuclear warheads. So Russia should be able to field about 1,000 TNWs by 2020 if it starts building them now.[53] Given the external linkages that Moscow is forming and the expectation of economic growth through 2020, Russia could probably also sustain several pockets of excellence regarding space, ASAT, information, and perhaps new weapons.

But since a concealed capability for surge production exists within Russian industry, Russia could produce and export these weapons provided there is sustained growth and a robust technology sector. Russia needs sufficient financial resources to generate those capabilities, although it would remain qualitatively behind the most advanced leaders in defense production. However, the issues of growth and a robust technological sector present more problems than are commonly realized.

Securing Foreign Technical Cooperation.

What kind of inputs into Russian technological and military capabilities will provide Moscow with security, deterrence, and a strategic warfighting capability by 2020? Clearly the leadership wants to invest in modernized nuclear weapons, dual-use information systems, and ACWs. Russia also is pouring large funds into research on directed energy weapons: lasers, microwave radiation emitters, and particle-beam generators using subatomic particles to destroy targets at the speed of light, a new mass plasma weapon that could ionize the atmosphere and destroy incoming missiles and enemy aircraft, anti-stealth radar, stealthy air-launched cruise missiles, newly tested anti-aircraft and anti-missile systems, and a plasma coating to make fifth-generation Russian aircraft invisible. These programs broadly comport with policy directives from the top to make Russia a competitive player in advanced, conventional, high-tech platforms and systems, including informational and perhaps biogenetic technologies.[54]

These enormous programs are probably being financed by foreign capital flows. As James Oberg recently observed, the government in 2000 earned $800 million from sales of space services, two-thirds of which was profit, besides receiving several hundred million more from the Russian government.[55] Space launches and other foreign sources that fund programs like the Cooperative Threat Reduction (CTR) Program and related efforts to manage Russia's nuclear arsenal, perform their stated mission, and let Moscow fund systems that would otherwise not be available for defense modernization. Other sources could also become available for that purpose.

For instance, Russia's state-owned domestic oil and gas industries currently operate at 50 percent of capacity. If energy prices remain high and Russia's productive capacity grows, the government can then reap $50-100 billion annually. Obviously much of that funding could go into defense production. Russian weapons production rose 60 percent in 1999-2000, suggesting the depth of available surge capability for conventional and nuclear weapons, not to mention new forms of biological and chemical warfare.

Therefore, Russian defense industry possesses a great deal of unused production and even surge capability, especially if it can be augmented by linkages to CIS plants and new sources of capital. Those revenue sources would allow Russia to modernize nuclear, information, chemical, and biological weapons by easing the burden on the government to finance exclusively the demobilization of obsolete systems. Another source of funding is expanded arms sales abroad, mainly to China, India, and perhaps Iran. Putin and the defense industry share the Soviet delusion that arms sales are a, if not the, locomotive of general industrial recovery.[56] Consequently, Putin aims to reorganize defense industry and arms sales programs to ensure greater state control and profitability of both these instruments of policy.

The surprising tenacity of this delusion and the consequent political strength of Russia's defense industry are a major explanation of that lobby's ability to obtain a continuing, though smaller, high level of funding from an exhausted economy and society, even though an uncontrolled defense industry is now seen as one of the major causes of the Soviet collapse.

Meanwhile, Moscow views the expansion of military sales abroad in a long-term context. For example, China is Moscow's biggest client, online to buy an estimated $15 billion worth of weapons through 2004-2005. Actually their agreement is for 15 years and contemplates **ultimate joint production of both conventional and strategic systems**. Russian sources claim that bilateral military contacts have doubled or tripled since 1999, thus corroborating Alexander Nemets and John Scherer's assertion that the total of all known Russo-Chinese military-technological exchanges approximates $5 billion a year through 2004, doubling the rate for 1996-99 and quadrupling the rate of annual arms sales for 1991-96.[57] Moreover, these figures omit "black" or classified programs and the extensive scientific-technological exchanges among Russian and Chinese scientists whose scope, extent, and parameters cannot be determined.

Russian analysts describe such military exchanges, which they claim will give Russian factories abundant orders for at least 5 to 7 years, as "primitive forms of mediation in military trade." They want the next phase of Sino-Russian military bilateralism to focus on a relationship that goes beyond Russia selling and China buying to more "advanced" forms, e.g., joint development and manufacture of munitions and weapons.[58] This outlook harmonizes with the idea of the 15-year cooperation plan and focuses on the perspective of increasing jointness.

During the first 5 years (2000-05), China would purchase from Russia up to $15 billion of new generation weaponry in the form of either manufactured items or

production licenses. Meanwhile, joint exercises and military training would be expanded across all branches. Perhaps the most important aspects of the Sino-Russian military cooperation would be in the areas of joint research and development for the next generation of airplanes, missiles, and laser-based and other high-tech weapon systems. Joint efforts in developing these systems would be the focus for the second and longer-term phase of the plan (2005-15).[59]

Russian officials have also indicated that if the United States builds missile defenses, Russia and China will cooperate jointly to resist or penetrate them.[60] That cooperation would undoubtedly involve some of the technologies and weapons contemplated in the 15-year plan. Joint production could entail some fungibility of strategic systems between Russia and China, further complicating an assessment of either state's future capabilities. We may also assert that it is likely that the next major advance in Russian space and/or satellite technology will occur in behalf of either Iran or China, which are both obtaining or being solicited to buy Russian models of spacecraft and satellites.[61]

Russia's new agreement with Europe on the European Air Defense System (EADS) also offers major contracts to sustain the aerospace and air defense industries while providing access to European funding, technologies, and defense decisionmaking.[62]

The Need to Reform.

Moscow's remedies clearly regress to an autarkic, state-controlled system based on restricting the flow of information and attempts at preferential treatment for the military and future scientists. They also are based on Mikhailov's and Putin's Stalinistic fantasies concerning defense industry. Although high-ranking officials have laid out high-tech objectives, a neo-Stalinist defense economy based on raw materials exports and a shrinking base of

competitive military production, as well as the crushing demographic and infrastructural problems, cannot provide those systems and still manage to compete with other major powers. But the size of the Soviet nuclear, biological, and chemical weapons complexes, Moscow's abiding reticence about these programs, and repeated claims that it cannot afford to destroy some 40,000 tons of chemical weapons (the largest program in the world), make it likely that either those weapons stocks will continue, be preserved, or be ready for quick reconstitution.[63]

The precise number of nuclear weapons also depends on foreign developments, particularly the fate of the American missile defense program and Chinese modernization, as well as on the success of economic reforms and conventional modernization. Putin's approach entails considerable structural remilitarization and coincides nicely with his overall progress towards a neo-imperial authoritarianism.

On one hand, if we are wrong and Russia can prevail in its war with Chechnya and successfully deal with other conventional threats by restoring some measure of its former conventional weapons power, Russia can successfully reduce its dependence on nuclear weapons and continue to follow the long-term trend towards fewer but more survivable and precise nuclear weapons, including tactical nuclear weapons. While the nuclear deterrent will be smaller, Russia's high-tech, IW, and space capabilities will be greater. On the other hand, if defense and economic reforms fail by 2020, as this chapter projects, then Russia will have to stop cutting nuclear weapons, including TNWs, and instead rely more on them as well as on chemical and biological systems, given the defects of its conventional defense systems and war economy. Space and IW capabilities will become even more prominent and unstable precisely because of Russia's overall instability.

Indeed, if reform fails or the external environment becomes truly menacing, Russia might even become unable to cope. Then some of the nightmare scenarios of state

decomposition feared by the Russian elite might come to pass. While Moscow undoubtedly can retain usable "strategic" capabilities—nuclear, biological, chemical, informational, and space weapons—until 2020 or develop some new ones, the faster it tries to develop those weapons by the means currently employed, the fewer it will develop, the harder it will be to develop them, the worse their quality or sustainability will be, and the greater the likelihood of Russia's continuing military decline. In this connection, the Russian armed forces' ability to stonewall its own and foreign governments regarding the reduction of its huge chemical and biological warfare stocks is of great concern and must be overcome.[64] For today's Russian elites that is an unacceptable conclusion. Yet to avoid these nightmare scenarios, they continue to run on the treadmill of reform to recapture the past, not to keep up with the present.[65]

ENDNOTES - CHAPTER 2

1. Russia's military may try to resolve this dilemma by increasing its dependence on its most mature, high-leverage weapons capabilities—i.e., its nuclear, biological, chemical, and informational systems. The costs of retaining and developing these specialized strategic capabilities, however, will only further accelerate the overall decline of Russia's general military forces.

2. Russian officers and analysts, interviews by author, Helsinki and Moscow, June 1999; Bill Gertz, "Russian Forces Help China in Mock Conflict," *Washington Times*, April 30, 2001, p. A1; Sokov, *Russian Strategic Modernization*, pp. 124-200; "Press Conference with Vyacheslav Romanov, Chief of the National Center for Nuclear Threat Reduction of the Armed Forces General Staff," *Federal News Service,* February 28, 2001, obtained from Lexis-Nexis; Oleg Odnokolenko, "Chill Before Using," *Segodnya*, December 19, 2000, obtained from Lexis-Nexis; "Russia Capable of Rebuilding Nuclear Shield," *Military News Agency*, March 1, 2001; Giles Whittell, "Russia's Missile Warning to U.S.," *London Times*, February 17, 2001.

3. *Segodnya*, August 3, 2000, *in Foreign Broadcast Information Service* (henceforth *FBIS SOV*), August 3, 2000. In another example, Sergei Stepashin, head of the Auditing Commission, observed in 2000, "Either we preserve Russia's territorial integrity—or we rush headlong into the implementation of the Zbigniew Brzezinski plan," an argument

that Russia will (or should) split into seven independent states. "Stepashin Promises To Turn the Screws," *Komsomolskaya Pravda*, June 10, 2000, obtained from Lexis-Nexis.

4. V. Men'vikov, I. Golovanev, and S. Pavlov, *Soldiers of the Future*, National Air Intelligence Center, July 1997, p. 3.

5. General M.A. Gareyev, *M.V. Frunze, Voyennyi Teoretik,* Moscow: Voyenizdat, 1985, p. 438; "Osnovnye Polozheniia Voyennoi Doktriny Rossiiskoi Federatsii (Izlozhenie)," *Krasnaya Zvezda,* November 19, 1993, pp. 3-8.

6. *FBIS SOV*, October 12, 1999; *FBIS SOV*, January 14, 2000; *Rossiiskaya Gazeta*, April 22, 2000, in *FBIS SOV*, April 24, 2000.

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9. *Segodnya,* August 3, 2000, in *FBIS SOV*, August 3, 2000; Federal News Service, "Press Conference With Alexander Konovalov, President of the Strategic Assessments Institute, and Sergei Oznobishchev, Director of SAI," Moscow, January 15, 2001.

10. Yevgeny Primakov was the originator of this approach, and his successor Igor Ivanov as well as Putin have consistently followed it. *Komsomolskaya Pravda*, September 30, 1998, in *FBIS-SOV*, September 30, 1998; Ye. Primakov, "Russia and the Outside World," *International Affairs* [Moscow], No. 3, 1998, pp. 7-13; V. Lukov, "Russia's Security Challenges," *International Affairs* [Moscow], No. 1, 1997, pp. 14-15.

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