RUSSIAN NATIONAL TECHNOLOGICAL SYMBOLISM: UNDER THE SOVIETS AND BEYOND

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Abstract

This article examines continuity and change in technological symbolism in the Soviet Union and Russia. Technology serves not only the ends for which it was created (a reactor, for example, to produce electricity), but ideological purposes of demonstrating state power and economic might, and serving to legitimate the state in the eyes of citizens. How did Soviet leaders use technology for these ideological purposes? How did these uses change over the course of Soviet history and into the history of the Russian Federation? Soviet leaders recognized that they might consciously use technological displays to educate the masses in the ways of socialism and patriotism. They unabashedly saw only good in modern technology, never its potential costs in human terms (new forms of unfamiliar labor, for example) or environmental impacts. Many of these characteristics may hold for the Putin administration as much as they did for the Stalin regime, as this analysis of Arctic conquest, nuclear power, and other technologies demonstrates.

Keywords: technology, symbolism, electrification, nuclear power, Stalin, Putin.

Under President Vladimir Putin the Russian state has engaged modern technology to re-create the image of a superpower. Heavy and growing investments in the Northern Sea Route through the Arctic, the space program, nuclear energy, and Skolkovo, a kind of Russian Silicon Valley, represent the most visible aspects of this effort. The Russian government intends these technologies to be symbols of enlightenment, power and authority. In these ways, the Putin administration is no different from any other government of the twentieth century, including the former Soviet Union, at which Russian officials and citizens today look with nostalgia for its great feats. What similarities prevail across Soviet and post-Soviet history in terms of technological symbolism? How did Joseph Stalin, Nikita Khrushchev and Leonid Brezhnev use achievements in science and technology as symbols of their rule and what role did they serve for the public?

Of course, big technology has long served as a symbol of state power throughout the world, and not only symbols but real labor-saving, power-producing, manufacturing and other devices.

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Technologies of state power include offensive and defensive weapons, fighter jets and bombers, destroyers and aircraft carriers, and rockets, in all of which Russia was an international leader. Yet even before the twentieth century big technology has served to indicate state power, political authority, and wealth or a combination of the three. In medieval towns cathedrals and clocks were a sign of prosperity, visible to the countryside. The cathedral, a magnificent achievement of geometry, strength of materials, and construction know-how, was the house of god and confirmation of the infinite goodness of the church, a center of civic pride, a destination for pilgrimage, and a place to display artifacts. Gothic architecture represented the authority of the medieval ruling elite, their power, wealth, and proximity to heaven, and was intended to suggest the awe and admiration of citizens. The clock tower indicated prosperity, perhaps yet to come.[3]

During the industrial revolution, states and corporations became much more consciously interested in technological symbolism. In the nineteenth century technological expositions celebrated the joining of state and economic power. The "Great Exhibition of the Works of Industry of all Nations," often referred to as the Crystal Palace Exhibition, held in Hyde Park, London, in 1851, catalogued the achievements of mercantilistic European powers, while the 1876 Centennial Exposition in Philadelphia celebrated not only the Declaration of Independence, but "Arts, Manufactures and Products of the Soil and Mine." These expositions demonstrated, in the minds of their promoters and those of the throngs of curious crowds, the epitome of advanced civilization, the power of its industry, and the legitimacy of the political regimes that created such things.

Large scale technological systems became paradigmatic in the twentieth century as symbols of state power. The monumentalism of the National Socialist Third Reich was intended to demonstrate the racial superiority of the nation and its unassailable power in physical structures that would last one thousand years. Adolf Hitler's architect, Rudolf Speer, designed parade grounds for Nuremburg spread over 16 square kilometers that, although never built, included a stadium for 400,000 people. But not only authoritarian regimes have recognized the ideological role of large scale technologies. On May 25, 1961, President John F. Kennedy addressed a joint session of U.S. Congress, and called for a very expensive and risky effort to put a man on the moon.[4] Brasilia in the center of Amazonia, built under President Juscelino Kubitschek, a man of planning and development in the late 1950s, served as a symbol of technocratic rule and was intended to indicate the power of the state to

[3] A. Pacey: *The Maze of Ingenuity: Ideas and Idealism in the Development of Technology*, Cambridge: MIT Press, 1976; D. Landes: *Revolution in Time: Clocks and the Making of the Modern World*, Cambridge: Harvard University Press, 2000.

[4] J.F. Kennedy: *Speech to Joint Session of the US Congress*, 1961, May 25, [Electronic resource] Mode of access: http://www.jfklibrary.org/Asset-Viewer/Archives/JFKWHA-032.aspx.

open the nation's rich interior to exploitation, modernity, national destiny in the hinterlands, and freedom from colonial past.[5]

The genesis of large scale technological systems in the complex interaction of economic, cultural and political forces has been studied extensively.[6] Their ideological significance for nation and state also has served as the focus of analysis, for example, of the development of atomic energy in postwar France or the space race in the US and the USSR and in Europe.[7] Whether big technology is most efficient way to accomplish some specific end has provoked debate. Achievements in big technology distract attention and budgets from social and political problems at the same time as they engender national pride. Yet most leaders, engineers, and citizens unquestioningly embrace big technology for economic, military, and other purposes, and as icons of national pride – in the form of modern highways in Germany or the US, hydroelectric power stations in India and Brazil, rockets and nuclear weapons for North Korea, and the industrial transformation in China.[8]

Given this world experience, what distinguishes the Soviet and post-Soviet state? Towards what ends have leaders supported such artifacts of modernity as canals, hydroelectric power stations, Arctic conquest and reactors? Soviet leaders recognized that they might consciously use technological displays to educate the masses in the ways of socialism, nationalism, and patriotism. They unabashedly saw only good in modern technology, never its potential costs in human terms (new forms of unfamiliar labor, for example) or environmental impacts. In this essay we examine technological symbolism in the USSR and Russia from the early years of Bolshevism to the present. But we devote the greatest attention in this article to the current era under Vladimir Putin – and in particular nuclear technologies – to show the great many similarities to the Bolshevik, Stalinist, and late-Soviet and post-Soviet strategies

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5 S.M. Martino: Building No Place: Oscar Niemeyer and the Utopias of Brasilia, *Journal of Architectural Education*, 2013, 67, 1: 8–16.

6 See for example, Th. Hughes: *Networks of Power: Electrification in Western Society, 1880–1930*, Baltimore: Johns Hopkins University Press, 1983; *American Genesis: A Century of Invention and Technological Enthusiasm, 1870–1970*, New York: Viking, 1989.

7 For discussion of the European contribution to the space race, see J. Krige, A. Russo: *Europe in Space, 1960–1973*, Noordwijk: European Space Agency Publications Division, 1994; J. Krige, A. Russo: *A History of the European Space Agency. The History of ESRO and ELDO from 1958 to 1973*, vol. 1, Noordwijk: ESA SP1235, 2000; J. Krige, A. Russo, L. Sebesta: *A History of the European Space Agency. The History of ESA from 1973 to 1987*, vol. II, Noordwijk: ESA SP 1235, 2000. On nuclear issues, see G. Hecht: *The Radiance of France*, Cambridge: MIT Press, 1998.

8 Among the many studies that consider the ideological and social aspects of large scale technologies, see W. McDougall: *The Heavens and the Earth…* New York: Basic Books, 1985; S. Kotkin: *Magnetic Mountain*, Berkeley: University of California Press, 1995; Th. Zeller: *Driving Germany*, New York: Berghahn Books, 2007; A. Nilsen: *Dispossession and Resistance in India*, London, New York: Routledge, 2010; M. Reisner: *Cadillac Desert*, New York: Viking, 1986.

to use technology for political, economic, military-strategic, and ideological purposes. The Soviets recognized the ideological purposes that technology can serve, for example, in generating feelings of belonging to the state endeavors, in educating the masses in collective ways, and in diverting attention from such problems as poor housing, food, and other consumer goods. They saw the value of greater and greater scale of the endeavors, and focused on energy, raw materials and construction technologies (hydroelectric power stations, smelters, nuclear reactors, and mines. In developing these technologies, they adopted top-down management with disincentives to innovation, in part because they mistrusted the alleged technocratic impulses of scientists and engineers. Many of these characteristics may hold for the Putin administration as much as they did for the Stalin regime.

Early Bolshevik Technological Symbolism from Lenin to Stalin

Vladimir Lenin recognized the crucial place of science and technology in the socialist world. While in his *State and Revolution* (1918) he explained the dictatorship of the proletariat and the need to destroy not only the bourgeoisie and their institutions, he also argued forcefully in many places and forums about how Tsarists specialists who were properly attracted to Communism, tractors, hydroelectric power stations, locomotives, scientific research – all of these things would be used to build socialism. He famously claimed that, with 100,000 tractors, the Bolsheviks would attract the peasant to their side.[9] He supported scientific expeditions and the formation of scores of research institutes. His commissar of enlightenment, Anatoly Lunacharsky, encouraged the participation of specialists in the new regime. Before his ouster and exile, Lev Trotskii pushed technology from electricity to the automobile to machine tools to the radio. The Bolsheviks sought to emulate western, in particular US technology; '*Amerikanizm*' and '*Fordizm*' were common terms, not signs of evil.[10] Together, the Bolsheviks in the 1920s embraced technology in deed and word.

The Bolsheviks promoted electrification of the country through the State Program for Electrification (GOELRO in the Russian, 1918), built a series of hydropower stations, and celebrated these first steps through a series of posters claiming that "Communism Equals Soviet Power Plus the Electrification of the Entire Country." Indeed posters helped to celebrate the tractor, nascent airplane operations (through Aviakhim and later Osoaviakhim), and automobility (the latter also through Avtodor, a voluntary organization). Party officials organized festivals to celebrate these objects. Many peasants embraced them, conducting wed-

[9] V.I. Lenin: *Sochinenie*, vol. 24, Moscow: Partizdat TsKVKP[b], 1935, 170. See also R. Miller: *One Hundred Thousand Tractors*, Cambridge: Harvard University Press, 1974.

[10] H. Rogger: *Amerikanizm* and the Economic Development of Russia, *Comparative Studies in Society and History*, 1981 (July), 23, 3: 382–420.

ding processionals on tractors. Parents named children "Electrification," "Tractor," "Forge."[11]

The Stalinist leadership built on this technological enthusiasm through a series of projects intended to show the might of the regime, and simultaneously served the function of gathering first generation workers, many of whom were illiterate, in massive constructions sights where they received rudimentary skills and political indoctrination. Through a series of early show trials that featured specialists in the dock, the authorities also showed their fear of the potential political power of scientists and engineers, and they drove home the point that engineering considerations and work conditions would be second to political decisions.[12] During the first five-year plan (1928–1932) over 1,000 enterprises began operation. Judging by newspaper reporting in *Pravda*, *Izvestiia*, regional, and local newspapers, by the amount of resources made available to them, and by their immortalization before the public, the most important from a political and ideological point of view were the *Dnieprostroi* hydroelectric power station and the Magnitogorsk iron and steel combine.[13]

During Stalin's self-proclaimed "Great Break (*'velikii perelom'*, 1929–1931)," party officials, economic planners and engineers joined in the effort to master the empire's extensive natural resources toward the end of economic self-sufficiency and military strength. At their order, armies of workers began the process of constructing giant dams and reservoirs on major European rivers – the Don, Dniepr and Volga. They planed extensive irrigation systems across Central Asia. They built canals and waterworks. The workers erected massive chemical combines, metal smelters and oil refineries in both European and Siberian parts of the country, paying little attention to the pollution they produced. They put up entire cities to house the laborers whom they exhorted to meet plans and targets irrespective of the environmental costs and the risks to the workers' own health and safety. The extensive and hulking planning system that developed along with these Stalinist artifacts enabled the USSR to industrialize rapidly – in ten years, create a nascent military-industrial complex, and barely to withstand the Nazi attack in 1941, although at a cost of millions and millions of poorly-fed and – housed people. Vladimir Putin announced his admiration for this system when talking of his plans to expand Russia's military in the 2000s.[14]

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11 R. Stites: *Revolutionary Dreams*, Oxford, 1989. On Popularization, James Andrews. Science for the Masses (College Station: Texas A and M University Press, 2003). On space and airplane culture, Scott Palmer, Dictatorship of the Air (Cambridge: Cambridge University Press, 2006), Asif Siddiqi, The Red Rockets' Glare (Cambridge: Cambridge University Press, 2010).

12 L. Graham: *Ghost of the Executed Engineer*, Cambridge: Harvard, 1993.

13 Anne Rassweiler, *The Generation of Power* (Oxford, 1988), John Scott, *Beyond the Urals* (1942), Steven Kotkin, *Steel City USSR* (Berkeley).

14 *Putin Sees Stalin's Industrialization as Model*, 2012, Sept. 3, [Electronic resource] Mode of access: http://www.themoscowtimes.com/business/article/putin-sees-stalins-industrialization-as-model/467476.html; *Putin says Russia must strengthen its economic, military position in Arctic*, 2014,

Stalin and his party relied heavily on slave labor in many of the projects; Russia's current leaders rarely mention this aspect of the Stalinist system, nor do they intend to show remorse for it. Beginning with the Baltic-White Sea Canal (referred to by may people as *Belomor*), they employed the gulag in murderous large scale projects. Indeed, many of the hero projects in fact were built by gulag organizations. The major Soviet hydro-engineering design and construction firm, Zhuk Gidroproekt, actually was born in the blood and lives of 70,000 prisoners at the Belomor construction site (Belbaltlag). Immediately after completion of construction, many Belbaltlag prisoners were sent to build the Moscow Canal. In 1931 "Comrade Stalin proposed to build a canal and turn the Volga to the walls of the Kremlin."[15] They built this second canal in 4 years, with 240 major structures including locks, pumping stations, dams, and tunnels. They excavated 200 million cubic meters of rock and soil, cut the shipping distance from Moscow to Gorky by 110 kilometers, and provided water for Moscow industry and residents through the Moscow River.[16] (As ships entered the canal from the Volga, they passed by statues of Lenin and Stalin on either side; Stalin was removed or blown up in 1961, but his pedestal remains which Dubna city residents use to train for rock-climbing.[17]) The camps had their own environmental – and of course human costs.

Stalin also set the stage for the technological symbolism of Putinism in the Arctic. In the 1930s Joseph Stalin provided extensive financial resources, personnel, and such new technologies as modern icebreakers to underwrite the effort to secure the Soviet Arctic from Murmansk on the Barents Sea near Norway to Vladivostok in the Pacific Ocean. Scientists, engineers, and explorers journeyed northward at great personal risk; they wrote in their memoirs that they believed Stalin himself was looking out for them. Like cosmonauts and astronauts decades later, heroic pilots flew a series of bold missions – in this case over the North Pole to demonstrate Soviet prowess.[18] Explorers wintered on the Arctic ice and studied ice regime, ocean currents, and water chemistry. Communist Party officials worked with leading specialists to establish an entire Arctic empire bureaucracy: the Main Administration for the Northern Sea Route responsible for Arctic economic development

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Aug. 29, [Electronic resource] Mode of access: http://www.reuters.com/article/2014/08/29/russia-putin-arctic-idINL5N0QZ2UL20140829.

15 *Stroitel'stvo Kanala imeni Moskvy*, [Electronic resource] Mode of access: http://nashram.ru/?page_id=66, accessed September 16, 2014.

16 *Kak Sozdavalsia Kanal im. Moskvy*, [Electronic resource] Mode of access: http://www.webpark.ru/comment/45260; *Stroitel'stvo Kanala imeni Moskvy*, and E. Kasimovski: *Velikie Stroiki Kommunizma*, Moscow: Gospolitizdat, 1951, 52–53.

17 F. Petrov: *Kanal im. Moskvy I Dmitlag*, 2013, Sept. 30, [Electronic resource] Mode of access: http://nasledie.dubna.ru/item.asp?idcategory=25&id=25&iditem=1119&idparent=24.

18 See K. Bailes: Technology and Legitimacy: Soviet Aviation and Stalinism in the 1930s, *Technology and Culture*, 1976, 17: 55–81, and S. Palmer: *Dictatorship of the Air*, Cambridge: Cambridge University Press, 2006.

parallel with ongoing ambitious national industrialization and militarization programs under the first five year plans (1929–1941).[19]

After the devastation of World War II, Stalin set out to rebuild the USSR. Rather than recovery or celebration of the victory, he pursued the same program of building large scale technologies important to state power from a military-strategic as well as ideological standpoint. He and his henchmen also rebuilt the country ideologically, pursuing political repression of any idea or individual perceived to be beholden to the west. The USSR would be first in everything as scribes rewrote history. Those who embraced western ideas were accused of kowtowing before the west. In similar ways, the Putin administration holds the US up as the main source of Russia's problems and has determined to harass if not close NGOs that have any international contacts.

The Russian government today offers big investment in state-sponsored high tech projects, while housing and infrastructure everywhere in the nation with the exception of Moscow and St. Petersburg deteriorate. Joseph Stalin provided this example, too. He ordered seven major skyscrapers built around Moscow in the late 1940s to confirm the glory of his rule while people still lived in ruble left from the World War. In 1948 he approved the Stalinist Plan for the Transformation of Nature to subjugate nature itself to Stalinist grandeur through canals, hydroelectric power stations, multi-million hectare irrigation systems, and forest defense belts. No longer would droughts, hot, dry winds (*sukhovei*), energy shortfalls, or agricultural failures prevent Stalin from achieving superhuman targets in industry and agriculture. Major rivers would be turned into machines, with stepped reservoirs and hydroelectric power stations. Rather than flowing "uselessly" downstream, the water would serve year-round purposes of power generation, irrigation, municipal supply, and industrial processes; they might build a total of 45,000 reservoirs and ponds. The irrigation water would turn vast regions of the steppe and Central Asian desert, rich in soil nutrients, but low in rainfall, into productive farmland and cotton and citrus plantations. Engineers designed locks and canals to improve inland river transport with the goal of linking major seas. Foresters audaciously approved the task of planting 70,000 kilometers of forest shelter belts – in belts 30 meters to 100 meters dense – to protect farmland from winds and keep moisture.[20]

Khrushchevean Technological Enthusiasm and Brezhnevite "Projects of the Century"

The Khrushchev era involved a series of reforms that have come to be known as the Thaw or de-Stalinization period. While Nikita Khrushchev

[19] P. Josephson: *Conquest of the Russian Arctic*, Cambridge: Harvard University Press, 2014.

[20] For details on the Stalinist plan, and for a sense of the heroic symbolism of the project, see F.P. Koshelev: *Velichestvennye Stalinskie Storiki Kommunizma i Ikh Narodnoxhoziistvennoe Znachenie*, Moscow: Gospolitizdat, 1952; E. Kasimovski, *Velikie Stroiki Kommunizma*, Moscow: Gospolitizdat, 1951.

was certainly involved in the Stalinist purges and deportations, he also recognized the need to abandon many of the Stalinist policies, its inhumanity, its violation of "democratic party principles" and its "cult of personality." At the twentieth party congress in his so-called Secret Speech, he denounced Stalin. Khrushchev's reforms touched every aspect of life from the economy to arts and literature and to science and technology. Khrushchev and other Soviet leaders used advances in the latter area to bolster their position. Among many people visions of a glorious communist future were reborn again. They based these visions on achievements in space and with the peaceful atom in particular. In fact, the Soviets first in the world in 1954 produced electricity from a reactor in Obninsk, Russia, connected to the civilian grid. Their advances in fusion research (the "Tokamak" design) astounded the world's physicists at the Geneva Conference on the Peaceful Atom (1955). Khrushchev himself flew to Harwell, England, to visit the British nuclear center in 1956 on a new Soviet jet. And of course the USSR was first in space with Sputnik (1957) as well as the first dogs, men, women, and a series of other "firsts" in space. Soviet leaders and citizens saw these achievements as a sign that the socialist system truly was better than the capitalist system. The press filled with daily stories on scientific successes as did such journals and magazines as *Tekhnika-Molodezhi*, *Nauka i Zhizn'*, and *Vokrug Sveta*.

The launching of the "Lenin" nuclear icebreaker (launched in 1957, operational from 1959) confirmed these "facts." Soviet officials, scientists, and engineers, as well as ordinary citizens**,** embraced nuclear technology with great enthusiasm; they perceived it as a powerful instrument to fulfill the great economic and social promises of the communist regime and to overcome the obstacles and backwardness to the economic and industrial development of the USSR. Beyond nuclear technologies, they expressed a strong enthusiasm for large-scale technologies in the taming of Siberian resources (through new fossil fuel complexes in Tiumen region and the Kuznetsk basin, hydroelectric power stations along the Ob, Angara, and Enisei Rivers, and through chemicalization of agriculture.

Leonid Brezhnev and his associated celebrated "trust" in cadres and the "perfection" of existing economic mechanisms in distinguishing themselves from what they frequently called Khrushchev's "hare-brained schemes" and impulsive leadership. Yet they also saw big technology as the key to the Soviet future and continued many of Khrushchev's projects. They touted a multi-billion ruble Food Program (1982) for ending endemic food shortages. They continued the assault on Siberian rivers with new energy complexes and a rejuvenated and massive program to "reverse" the flow of Siberian rivers into transfer canals for agriculture in Soviet Central Asia. They built a new trans-Siberian railroad (known by its acronym as "BAM") as a symbol of Brezhnevite achievement and, as the propagandists constantly reminded the masses, as "the project of the century."[21]

[21] On BAM, for example, see Ch. Ward: *Brezhnev's Folly: The Building of BAM and Late Soviet Socialism*. For an early variant of technological display, see

For Brezhnev era planners, as well, nuclear technologies were important for economic and ideological regions. Soviet (and contemporary Russian nuclear specialists) argued that nuclear power alone could solve the problem of the sharply uneven geographic distribution of Russian population, industry and resources. While roughly 70% of population and industry are located in the European part of the nation, 70% of fossil fuel reserves are found in Siberia, east of the Ural Mountains, and in Arctic regions. They noted that the cost of transporting that energy in primary form, or as electricity after building power stations near production facilities is exorbitant, making the construction of nuclear power stations near urban centers, even on the outskirts of cities, to produce electricity and industrial heat an attractive proposition. (Nuclear power in the twenty-first century will allow Russia's Gazprom to export gas to Europe – as it permitted the USSR to develop Siberia's Tiumen fields to earn hard currency.)

Engineers gained government support to expand research programs, establish new applied institutes to produce expensive equipment serially, and began the accelerated construction of a new of new nuclear power stations for both pressurized water reactors (PWRs or VVERs in Soviet parlance) and channel-graphite reactors (RBMKs – the Chernobyl design). Looking for economies of scale, the industry adopted standard 1,000 MW VVERs and RBMKs (later turning to 1,500 MWe RBMKs and with plans to build even 2,400 MWe units). The nuclear industry built a factory, Atommash ("Atomic Machinery") in Volgadonsk on the Volga River in the 1970s to produce annually up to eight pressure vessels and associated equipment in a huge foundry serially a la Henry Ford. Atommash would ship the 1,000 MWe VVERs by barge and railroad to reactor "parks" of four, six, even eight reactors, including sale to socialist countries of Eastern Europe. But rather than serial production and low costs, Atommash produced only 3 reactor vessels in all before a wall of the main foundry building collapsed in the much. Apparently engineers failed to take into consideration the changed hydrology of soils on the building site brought about by the proximity to the Tsimlianskoe Reservoir. Yet even with the failure to build a wall properly specialists from the successor organization of the Soviet nuclear ministry, Rosatom, remain convinced today that serial reactor production will succeed and costs will drop significantly, with Russia soon building 2, 3 or even 4 reactors annually in five or six years each, and at costs significantly lower than those in France.[22]

By the end of this period, Soviet scientists had taken to calling the facilities "parks" for a variety of reasons. One was to show that big, nuclear technologies, so often connected with dangerous military applications, in fact were peaceful and compatible with nature; the Chernobyl station was built on the scenic Pripiat' River. Second, a nuclear park, like any

M. Payne: *Stalin's Railroad: Turksib and the Building of Socialism*, University of Pittsburgh Press, 2011.

22 V.A. Sidorenko et al.: *O Strategii Iadernoi Energetiki Rossii do 2050 Goda*, Moscow: NITs "Kurchatovskii Institut," 2012.

technopark or technopolis, brought together personnel and shared machinery and equipment to keep construction and operating costs down. At reactor parks stations shared buildings and halls, and they used standard industrial equipment.

Continuing the conquest of the Arctic begun under Stalin, in the Brezhnev era they relied heavily on the peaceful atom. In addition to a fleet of nuclear icebreakers to keep the Northern Sea Route open, they began to build stations in Arctic regions. The Poliarnye Zory station on the Kola Peninsula with PWRs dates to the 1970s, consists of four VVER reactors at 440 MW each, and produces sixty percent of the electrical energy for the Murmansk region.[23] They experimented with compact (small capacity) reactors in the construction of the Bilibino Nuclear Power Station, the northern-most nuclear power plant in the world, well above the Arctic circle, as part of its effort to create a nuclear-powered Arctic, and to bring a special kind of "fire" to the simple Chukchi people. Bilibino consists of 4 graphite-moderated EPG-6 reactors, related to the RMBK design, each producing 12 MW electric and 62 MW thermal power (heat) that provides 80% of the region's electricity.[24]

On the eve of the break-up of the USSR, encouraged by the policies of perestroika and glasnost of Mikhail Gorbachev, many Soviets began to question the Soviet development model and its reliance on large scale approaches for resource development. These had had extensive human and environmental costs, as the citizen learned in a constant drumbeat of reporting in the Soviet press. In particular, the Chernobyl disaster of April 26, 1986, triggered fear of the technogenic potential of systems that had been presented as the epitome of Soviet accomplishment, and also contributed to independence movements in Ukraine, Lithuania and elsewhere.[25] Writers led the charge, as they had in the 1960s through the weekly *Literaturnaia Gazeta* in condemning the despoliation of Lake Baikal by pulp and paper mills. Sergei Zalygin, editor of *Novyi Mir*, campaigned against Siberia River diversion, while such representatives of village prose as Valentin Rasputin criticized the destruction of some kind of pristine Russian nature.

Reprise: Putinism and Technological Symbolism from Arctic to the Moon

The Putin administration has determined to allocate extensive resources to large scale technologies to shore up the nation's image and self-understanding as a superpower after the psychological shock of the break-up of the USSR. In addition to the military and economic benefits of big technology which Putin and his advisors underline, they recognize

23 Informatsionnyi Sait Kol'skoi AES, see http://kolanpp.ru/ as accessed September 16, 2014.

24 Informatsionnyi Sait Bilibinskoi AES, see http://www.bilnpp.rosenergoatom.ru/ (accessed Sept. 16, 2014).

25 J. Dawson: *Econationalism: Anti-Nuclear Activism and National Identity in Russia, Lithuania, and Ukraine*, Durham: Duke University Press, 1996.

the ideological value of these technologies to secure Russia's place among the leading scientific powers of the world and channel the thinking of the citizenry away from concerns about the present and political dissent and toward feelings of love for motherland. Combined with state-sponsored programs to develop natural and mineral resources (timber, oil, gas, nickel, platinum, copper and so on), Putin believes that big technologies indicate the success of his rule and provide the justification for tightening political power over any remaining opposition. What is surprising is the similarity in the rhetoric surrounding Putin's various programs with those of the Stalin era, and even Putin's unabashedly direct reference to Stalinist programs and approaches to justify investments in these technological displays.

Symbolism and rubles have combined to secure the Russia Arctic. Reminiscent of the race between the Soviet Union and the United States to put a man – and flag – on the moon, in August 2007, Russian parliamentarian and explorer Artur Chilingarov engaged in what some observers called a publicity stunt by planting a Russian flag on the bottom of the Arctic Ocean at the North Pole. The government supported the expensive expedition as part of the Russian contribution to the Third International Polar Year (2007–2008). All of the components of Russia's quest for strategic advantage, economic growth, and superpower symbolism were present. A nuclear-powered ice breaker, "Rossiia," cleared the way for a research ship, "Akademik Fedorov," staffed by approximately 130 scientists, to get into position for Chilingarov's descent. President Putin welcomed Chilingarov's flag-planting expedition as confirmation of Russia's claim of the Lomonosov Ridge to extend its exclusive economic zone towards the North Pole and several vast oil and mineral deposits. Putin noted that Russia's distinguished history was closely linked to Arctic exploration. Tying these Russian efforts to the great power status of the USSR, he referred to Soviet efforts to build major facilities and cities in circumpolar regions and to the Northern Sea Route in the 1930s.[26]

As it had for Joseph Stalin, the 5,000-kilometer Northern Sea Route from Murmansk to Vladivostok along the Arctic Circle assumed mythic scale for twenty-first-century Russian leaders. In June 2010 then President Dmitri Medvedev called for the modernization of both military and civilian shipbuilding to enable Russia to engage in the "recently

[26] J. McCannon: *Red Arctic*, New York: Oxford University Press, 1998. The Arctic has become transformed from a site of Cold War competition to one of fierce economic competition. While policy makers and specialists temper competition with cooperation in areas of scientific research, notably on climate change and other environmental studies, the nations of the circumpolar world are rushing to chart and develop natural resources – notably oil and gas, but also nickel and copper, titanium, iron and coal, and fisheries and forestry. The Russian government has pursued these resources with renewed vigor because of its security and economic interests. See L. Heininen (with Heather Nicol): The Importance of Northern Dimension Foreign Policies in the Geopolitics of the Circumpolar North, *Geopolitics*, 2007 Febr, 12, 1: 133–165.

toughening competition for Arctic resources."[27] On May 12, 2012, Putin issued an executive order about the need to modernize Russia's military-industrial complex. He referred without irony to the Stalinist legacy of building military industry in the 1930s with his instructions for "developing the Navy, first and foremost in the Arctic areas and in Russia's Far East with the aim of protecting the Russian Federation's strategic interests."[28]

Russian shipbuilders, administrators, and officials revealed great nostalgia for the Soviet Union which created the world's greatest icebreaker fleet. Russia remains the only country to operate civilian nuclear-powered icebreakers, although the icebreaker fleet has aged considerably, and a number of them have reached the end of their service lives. Hence Russians of the Soviet generation evince nostalgia for the "Lenin" icebreaker. In the celebratory exposes of the glorious Soviet heritage contemporary journalists never mention the dangers involved in the rapid, and perhaps premature, embrace of nuclear icebreakers, but instead emphasize that Russians are a full quarter century ahead of the other nations. At the end of the 1950s "we left the Americans behind and first built a nuclear icebreaker," the chief engineer of the "Lenin" atomic icebreaker recently recalled,"[29] ignoring the fact that the "Lenin" had two serious accidents in 1965 and 1967 both of which released significant amounts of radioactivity and led to illegal dumping of wastes and reactors at sea.[30]

Russian leaders were determined to recapture the ideological glories of the Soviet icebreaker. Russia will spend 37 billion rubles on its next atomic icebreaker according to a contract signed in 2012 between the Baltic Shipbuilding Factory and "Rosatomflot," a subdivision of the Russian nuclear ministry, Rosatom.[31] The new icebreaker has the name "Arktika" which determines its class (size) and historical tie to the past.[32]

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27 *Security Council meeting on shipbuilding development*, 2010, June 9, [Electronic resource] Mode of access: http://eng.kremlin.ru/news/399.

28 Executive Order on implementing plans for developing Armed Forces and modernising military-industrial complex, 2012, May 7, [Electronic resource] Mode of access: http://eng.kremlin.ru/news/3777.

29 E. Beliakov: *Arkticheskie Vezdekhody*, 2011, Oct. 8, [Electronic resource] Mode of access: http://kp.ru/daily/25767/2751896/.

30 A. Ozharovskii: *Lozh na Pervom: Po Mneniiu Zhurnalistov na Ledokole Lenin Avarii Ne Bylo*, 2009, May 6, [Electronic resource] Mode of access: http://www.bellona.ru/weblog/andrey-ozharovsky/1241708613.5. For a map of other reactors dumped in the Arctic Ocean, see http://www.solovki.ca/danger/radiation_02.php.

31 *"Rosatomflot and Baltiysky Zavod signed a contract to build an icebreaker with a capacity of 60 megawatts"*, 2012, Aug 24, [Electronic resource] Mode of access: http://www.arctic-info.com/news/24-08-2012/rosatomflot-and-baltiysky-zavod-signed-a-contract-to-build-an-icebreaker-with-a-capacity-of-60-megawatts.

32 See http://kommersant.ru/doc/2007338?isSearch=True (2012, Aug 24). The new "Arktika" "will differ from earlier atomic icebreakers by the fact that it is capable of working both in estuarial conditions which demand a small draft, and in deep waters which demand a large draft." Most people anticipate cost overruns, and funding already lags.

Andrei Smirnov, the deputy director of "Rosatomflot" argues that icebreakers will give impetus to exploitation of difficult-to-extract fossil fuels, and will enable a five- or six fold increase in shipping along the northern sea route. He supports the construction of an entirely new icebreaker fleet. Icebreakers make not only economic sense: Smirnov pointed out that from Kamchatka to Murmansk takes but 7 days, whereas through the Suez Canal would take 20 or 25 days, and while the northern latitudes had ice, the southern had something more dangerous, pirates, and pirates "cannot exist in the Arctic in principle: they will freeze."[33]

Similarly, contemporary Russian leaders have been increasingly vocal in celebrating other Soviet achievements – Stalin's joyous establishment of the nation as a military power in the 1930s, the first satellite, Sputnik, and man, Yuri Gagarin, into space in 1961, and, of course, various nuclear achievements – with the exception of Chernobyl. Space has been centrally important to Russian self-image and imagination.[34] Gagarin, for example, was important as a new kind of hero – a hero of the potentialities of Soviet society under Khrushchev, and of reborn faith in the communist future. Under President Putin, Gagarin's heroism has been reborn to serve the state.[35] On the fifty-second anniversary of Yuri Gagarin's flight into space, Putin unveiled a USD 50 billion drive for Russia to preserve its status in space, including the construction of a new cosmodrome at Vostochny in the Amur region of the Far East.[36] As Stalin forced the nation to "reach and surpass" the west, so Putin announced that Russia will send manned flights from its own soil in 2018 from Vostochny to deep space and moon missions as part of the effort to catch up and overcome the gap in "so-called deep space exploration" and for Russia to "preserve its status as a leading space power." Then following Brezhnev's lead, Putin congratulated cosmonauts in Russia's Space Exploration Day: "These are not just any greetings, these are greetings from the construction site of our future."[37] On April 12, 2014, Putin appeared at the Space Museum in Moscow to celebrate Gagarin Day and announced a 26-year plan to colonize and mine the moon.[38]

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33 Beliakov, op. cit.

34 Palmer, Dictatorship of the Air. On Russian hero building, see L.L. Kerber: *Tupolev*, St. Petersburg: Politekhnika, 1999; N. Bodrikhin: *Tupolev*, Moscow: Molodaia Gvardiia, 2011; G.V. Novozhilov (ed.): *Iz Istorii Sovetskoi Aviatsii: Samolety OKB imeni S.V. Il'iushina*, Moscow: Mashinostroenie, 1990); P.I. Kozlov: *Velikoe Edinstvo: Dokumental'naia Povest'*, Moscow: DOSAAF SSSR, 1982.

35 A.L. Jenks: *The Cosmonaut Who Couldn't Stop Smiling: The Life and Legend of Yuri Gagarin*, DeKalb, IL: Northern Illinois University Press, 2012.

36 For discussion of the political, social and cultural importance of the space race to Soviet Russia, see A. Siddiqi: *The Red Rockets' Glare: Spaceflight and the Soviet Imagination, 1857–1957*, Cambridge: Cambridge University Press, 2010.

37 See http://www.independent.co.uk/news/world/europe/putin-aims-for-the-stars-with-33bn-space-programme-8570462.html.

38 *"Is Vlad Keen on a Trip"*, 2012, April 12, [Electronic resource] Mode of access: http://www.dailymail.co.uk/news/article-2602291/We-coming-

A Self-Proclaimed Nuclear Renaissance

But, of course, given the history of the Cold War and the importance of being a nuclear superpower *after* the Cold War, nuclear symbolism remains strong. After coming to power in 2000, Russian President Vladimir Putin began a campaign to rejuvenate reactor construction within Russia and to promote reactor sales abroad. Currently, Russia has 33 operating reactors and 11 reactors are under construction on its territory at sites of the Novovoronezh NPP (nuclear power plant), Leningrad NPP, Baltic NPP, Beloyarsk NPP and the world's first floating nuclear co-generation plant Akademic Lomonosov in Petropavlovsk-Kamchatsky.[39] In 2006, the Russian Government approved the federal program on the Development of Nuclear Power and Industry Complex of Russia in 2007–2010 and until 2015 with plans 26 new nuclear power units to be commissioned before 2020. The president created State Atomic Energy Corporation "Rosatom" under general director Sergei Kirienko to replace the abolished Federal Atomic Energy Agency. Like its Soviet predecessors, the massive corporation is top-heavy, has great visibility, and has consumed any organization even slightly related to the atom. Rosatom consists of over 250 enterprises and organizations and employs over 250,000 people.[40]

During the start-up ceremony for the new nuclear reactor in Volgodonsk in March 2010 then Prime Minister Vladimir Putin praised exceptional Russian nuclear ambitions. He promised to augment the nuclear share of the country's energy system from 16% in 2010 to a "minimum 25%" in the future. Comparing Russian ambitions to the achievements of the Soviet civil nuclear technology he pointed out:

> "We plan to build about the same number of nuclear power plants, as had been built during the entire history of nuclear power engineering in the Soviet Union. But the Soviet Union had been building them for decades,

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Moon-FOREVER-Russia-sets-plans-conquer-colonise-space-including-permanent-manned-moon-base.html. Russian leaders may well embark on this new space effort through the new "Angara" rocket low-earth orbit rocket. The "Angara" project dates to the 1990s and an ongoing effort to be free from Soviet dependencies on Ukrainian missile construction facilities and Kazakh-based launches from the Baikonur cosmodrome that supported Gagarin and others. Unfortunately, to date, the "Angara" has yet to lift-off successfully from Plesetsk in Arkhangelsk province. See: "Russia Gearing Up for Launch of First Post-Soviet Rocket," *Moscow Times*, 2014, June 27, [Electronic resource] Mode of access: http://www.themoscowtimes.com/business/article/russia-gearing-up-for-launch-of-first-post-soviet-rocket/502608.html.

39 IAEA. Power Reactor Information System, Russian Federation, see http://www.iaea.org/PRIS/CountryStatistics/CountryDetails.aspx?current=RU (acc. 10 March 2013).

40 Rosatom: *Russian Nuclear Industry Today*, [Electronic resource] Mode of access: http://www.rosatom.ru/en/education/russian_nuclear_industry/ (acc. 17 March 2013).

and had built 30 large power plants, whereas we are going to build 26 in the nearest future."[41]

References to the Soviet nuclear past as an undoubtedly positive experience that must be emulated are widespread in Russian official nuclear and political discourse; this may appear surprising after the Chernobyl disaster, the costs of its clean-up, and public revelations in late 1980s and the 1990s about other Soviet nuclear accidents and failures. This attitude can be partially explained by what researchers analyzing specific characteristics on the nuclear technology in general often depicted as its particular immunity to the memory of past failures connected with an ideology of progress – that is so central to reborn Russian nuclear symbolism. This ideology makes those who promote or support nuclear energy always frame its value in terms of future promises, rather than past or present achievements let alone problems.[42] This oblivion with regard to past failures is particularly striking in the way most Russian pro-nuclear scientists and officials treat Russian and Soviet nuclear past.

Russian politicians and nuclear specialists regularly emphasize the geopolitical importance of the nuclear technology. They stress the fact that having a powerful nuclear industry is a question of international political prestige and a "necessary condition for regional leadership." Russia, experts add, has a "unique scientific and engineering potential that will allow the country to be among the leaders of a world nuclear branch" and even to "create a new atomic market.[43] Economically, this leadership means a minimum of 25% of world market of services in the domain of construction and exploitation of nuclear power plants[44] against 16% in 2010.[45]

Politically, Russian officials describe the country's nuclear role in the international arena as one of the leading promoters of nuclear safety and of a more fair distribution of the nuclear technologies in the world. Talking about the problems of the world's nuclear industry and Russia's role in solving them, at the International Forum Atomexpo 2011 in Moscow Kirienko said:

> "We face the greatest task to develop all together such solutions and conditions that would guarantee every person and every country in the world the access to the benefits of the peaceful uses of nuclear energy. Guarantee to all mankind, that nuclear power will be safe from the point

41 NTV, 2010: *Atomnye ambitsii Rossii*, 2010, March 18, [Electronic resource] Mode of access: http://www.ntv.ru/novosti/188376/#ixzz2NRZQAAsx (acc. 10 March 2013).

42 J. Byrne, S.M. Hoffman: *Governing the Atom: The Politics of Risk*, London: Transaction Publishers, 1996.

43 See http://www.postcrisisworld.org/files/mirni_atom_report_ru.pdf

44 NTV, *Atomnye ambitsii Rossii*, op. cit.

45 IAEA, Power Reactor Information System. Russian Federation, [Electronic resource] Mode of access: http://www.iaea.org/PRIS/CountryStatistics/CountryDetails.aspx?current=RU (acc. 10 March 2013).

of view of non-proliferation regime, and from the point of view of normal safe operation."[46]

Nuclear officials discuss the noble character of their strategy to conquer the markets of developing countries. They insist on the need to transfer safe technologies to the less developed and poorer countries to allow their population to have better life conditions; in the last decade this type of discourse has served to justify the exports of Russian nuclear technologies to post-Soviet, Asian and Mideastern countries; reactor projects are underway in India (Kudankulam), Iran (Bushehr), Turkey (Akkuyu), Belarus (Ostrovets), and China (Tianwan Phase II). These programs and this rhetoric harken to the Soviet period when almost every Soviet republic was involved in the centrally-conceived application of nuclear technologies. Adopting standardized approaches and machines, nuclear physicists and engineers from Moscow and Leningrad constructed dozens of reactors for the republics, provided them with documentation, trained local specialists, and helped to establish local research and educational facilities in the nuclear domain. A large-scale specialized machine-building facility outside of Leningrad, NIIEFA (the Scientific Research Institute of Electrophysical Apparatuses) provided standardized components for reactors and particle accelerators to push "atomic powered communism" into the republics. The establishment of science and technology research programs, institutes, and production facilities gave leaders and specialists in the union republics of the "younger brothers" of the Russians the feeling that they were part of socialist modernity and helped to overcome lingering feelings of Russian imperialism.[47]

"Nuclear colonization" of Eastern Europe followed a similar pattern. Soviet nuclear technological assistance here consisted in selling the Soviet "allies" reactors or turn-key power plants, training local scientists and engineers, supplying uranium, and taking back of the spent nuclear fuel. The transfers of the nuclear technologies aimed primarily to strengthen loyalty of local elites to the Soviet state, legitimate Soviet political domination, and ensure political and economical stability in these socialist nations that played the role of a "security belt" with regard to the capitalist west. Such East European countries as Czechoslovakia and Eastern Germany competed for this assistance which was highly profitable for them in spite of the fact it increased their countries' dependence on the USSR.[48]

Even if it would be an exaggeration to talk about a new Russian nuclear colonialism, several current Russian foreign nuclear policies» are

[46] NTV: *V Moskve Obsuzhdayut Voprosy Yadernoi Energetiki*, 2011, June 6, [Electronic resource] Mode of access: http://www.ntv.ru/novosti/230573/#ixzz2NRcbJ2oR.

[47] P. Josephson: *Red Atom: Russia's Nuclear Power Program from Stalin to Today*, Pittsburgh: University of Pittsburgh Press, 2005.

[48] S. Schmid: Nuclear colonization? Soviet Technopolitics in the Second World, in G. Hecht (ed.): *Entangled Geographies: Empire and Technopolitics in the Global Cold War*, Cambridge: MIT Press, 2011.

strongly reminiscent of the Soviet era. These policies aim to preserve political and economic dependencies and to maintain Russian influence zone in the post-Soviet space. Kazakh-Russian uranium cooperation and nuclear power plant construction projects in the Baltic Sea region are two particularly relevant examples to illustrate these Russian post-colonial practices. Since late 2000s Rosatom has developed a growing presence in Kazakhstan which has 15% of the world's uranium resources and since 2009 has been the world's leader in the uranium production.[49] In July 2006 Russia and Kazakhstan signed an important cooperation program creating three nuclear joint ventures for new nuclear reactors, uranium production, and enrichment. Kazakhstan has also joined Russia and Belarus in a new Kazakh-Belarusian-Russian customs union created in 2010 that, among other things, will allow Russia to influence trade terms for exports of uranium from Kazakhstan. Russian nuclear projects in the Baltic Sea region are another element of this strategy. In 2008 the governments of Russia and Belarus announced the construction of two nuclear power stations, one in Belarus, in the Astravets district, 23 km from the Lithuanian border, and the other in the Kaliningrad region of the Russian Federation, situated 10–12 km to the south from the Lithuanian – Russian border.

The Russian nuclear industry has become a particularly appropriate instrument to promote that image of highly technological and powerful Russia. In the beginning of the second decade of the 21st century Rosatom seems to have no doubts about Russian nuclear grandeur, as the official website of the Russian State nuclear corporation declares:

> "The Russian nuclear industry is one of the world's leaders in terms of the level of scientific and technological developments in the area of reactor design, nuclear fuel, experience of nuclear power plant operation, NPP personnel qualification. Enterprises of the industry have accumulated huge experience in solving large-scale tasks — such as creating the world's first nuclear power plant (1954) and developing fuel for it."[50]

On top of these historical roots, industry spokesmen claim, are the world's leading nuclear technologies:

> "Russia possesses world's most advanced enrichment technologies, and nuclear power plants with VVER water-moderated water-cooled power reactors have proved their reliability in the course of one thousand reactor years of trouble-free operation. High quality of manufactured products and offered services is also confirmed by the successes in international tenders for nuclear fuel supplies and NPP construction abroad."[51]

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49 World Nuclear Association. Uranium and Nuclear Power in Kazakhstan, see http://www.world-nuclear.org/info/Country-Profiles/Countries-G-N/Kazakhstan/#.UU66EBkpE64 (acc. 20 March 2013).

50 Rosatom: *Russian Nuclear Industry Today*, [Electronic resource] Mode of access: http://www.rosatom.ru/en/education/russian_nuclear_industry/ (acc. 17 March 2013).

51 Ibid.

Other powers have mentioned "one thousand years" of power, but in a different context – the Third Reich.

Great Powers Win Medals, Too

In the Sochi Winter Olympic Games, as in Hitler's 1936 Berlin games, Putin wedded state power, wealth (here petrorubles), and visions of gold medals – the latter achieved especially on the last day of the Olympics with a sweep of the gold, silver and bronze medals in the men's 50 kilometer ski race – with the goal of demonstrating to the Russian citizenry the recovery of the nation from the embarrassments of the 1990s – the breakup of the Soviet empire, an allegedly farsical leader, Boris Yeltsin, who drunkenly played into the hands of the American capitalists and CIA, the collapse of the economy, and the shock of a demographic crisis that left Russia the only industrial power with a declining population as deaths exceed births.

The Putin administration was determined to use Sochi to deflect public attention from those problems – and from its assault on personal freedoms and its newly-passed homophobic laws – in a grandiose celebration of state power. The celebration required Putin's oligarchs to pay for his leadership. Throwing environmental caution to the warmer winds of the Black Sea resort, the government spent at least USD 50 billion for buildings, stadiums, venues, and snow making machines to build a winter wonderland of benefit to the wealthy in an inappropriate climate with significant environmental degregation the result, much of it going to corrupt projects and individuals. Illegal waste dumps, denuding of hillsides, destruction of ecosystems will have long term impacts on the subtropical Sochi region.[52]

Described by one observer as "outsized in scale and ambition," the cost exceeded the games in Vancouver, Canada, in 2010 ten times. A company owned by Vladimir Potanin, one of the wealthiest men in the world whose fortune includes Norilsk Nickel, complained that one of his companies had had to pay out USD 530 million in extra work. Other oligarchs complained as well, but Putin determined that costs are no object because he wanted the Sochi games to project an international image. One of his spokesmen said, "All (rises in costs) there are justified. It is not possible to calculate everything in advance. New demands arise, including those from the International Olympic Committee, which require additional costs. There's nothing extraordinary about it."[53] Hidden not far away from the Olympic village, the number of Russian people living in poverty continued to grow, human rights violations played out

[52] Anti-Corruption Foundation, Sochi 2014: Comprehensive Report, see http://sochi.fbk.info/en/, and A. Luhn: *The Hidden Environmental and Human Costs of the Sochi Olympics*, 2014, Jan 22, [Electronic resource] Mode of access: http://www.thenation.com/article/178051/hidden-environmental-and-human-costs-sochi-olympics#.

[53] Th. Grove: *Russia's USD 50 billion gamble on 2014 Olympics*, [Electronic resource] Mode of access: http://www.nbcnews.com/id/50892025/ns/business-world_business/#.USfABh3BLmc.

in the name of protection against terrorism, and activists were arrested, jailed, and sentenced to long prison terms.

The opening ceremony was a bizarre self-referential celebration of the Russian past and present that glossed over the authoritarianism of the Tsars and the murderous policies of Stalin while incorporating symbols of that Russia past: robot bears; a likeness of the "bronze horsemen" statue of Peter the Great; the Soviet hammer and sickle (as historian Matthew Light wondered, how would people react to a swastika being displayed at an Olympics in Germany?); and castles, fortresses, and churches that reminded viewers that the Russian Orthodox Church has reunited with the Kremlin after the Soviet interregnum, the same church that joined Putin's political party in trying to dominate elections, happily saw the prosecution of the Pussy Riot rock group, and spearheaded the effort to tie conservative homophobic values to state policies. There were a few glitches: the Olympic torch, developed by a Siberian factory that produced ballistic missile parts, which traveled to the cosmos and back on the way from Athens to Sochi, self-extinguished a number of times and had to be re-lit with cigarette lighters; one of the Olympic rings failed at the opening ceremony failed to light. But four of five is a passing grade.

The Technological Might of Russia and Nationhood

Wedded to extravagant expenditures on sports facilities for the Sochi Olympics and the upcoming World Cup in soccer in 2018, the Russian federation also continues its turn to Soviet style technological programs with reverence to the past. The current energy plan to the year 2020 is as utopian as the GOELRO plan adopted under Lenin in 1918 because it sees the solution of all Russian economic problems on the creation of new generation capacity, nuclear in the European part of the country, hydroelectric in Siberia and the Far East.[54] Indeed, the government plans to introduce 26 million kW of new hydroelectric power stations by 2020 and perhaps 30 new reactors by 2030.[55] Does Russia need this electricity for production? Will it serve the public? Will major enterprises and industries be the beneficiary as in the past? And how will symbolic technology play out for the Russian citizen?

Scholarly literature on Russian nationalism after the collapse of the USSR has emphasized the existence of competing ideologies suggesting different definitions of Russianness and of Russian nation.[56] None of these definitions could become the sole principle for public policies because of inevitable contradictions and conflicts it would provoke within

54 *General'naia Skhema Razmeshcheniia Ob'ektov Elektroenergetiki do 2020 Goda*, Rasporiazhenie № 215-r, Febr 22, 2008 (Moscow: Government of the Russian Federation, 2008).

55 *General'naia Skhema*, op. cit., 15, 24.

56 V. Tolz: Forging the Nation: National Identity and Nation Building in Post-communist Russia, *Europe-Asia Studies*, 1998, 50, 6: 993–1022; V. Tolz: Conflicting 'Homeland myths' and Nation-state Building in Postcommunist Russia, *Slavic Review*, 1998 Summer, 57, 2: 267–294.

Russian society. Yet, to avoid the potentially explosive conflicts over the definition of Russian identity, the Kremlin has been promoting an official state nationalism. The latter has been based on patriotic ideas that seek to unify Russian society over the conflicts of early 1990s as well as to strengthen state legitimacy that was weakened after the end of the USSR and during Yeltsin years. This patriotism had not only an important past dimension but also that of the future including the image of modern and technologically-developed and even westernized Russia.[57]

In much the same way, therefore, as leaders of the Russian empire before him, President Putin uses technological symbolism to re-create the image of a great power. He and his advisers understand that they have re-affirmed Russia's military might. But they also know that a new cosmodrome, a new reactor, a new hydropower station, or a corporate skyscraper can serve not only instrumental purposes, but also convince the public that Russian authority and power has been assured, even if many citizens remain mired in a life of poverty. They are Russians, and big technology emphasizes the status as leading people of the world. Through the peaceful atom, Arctic conquest, the development of Siberian resources, and designs on the moon, they have indicated there are few barriers to Russia's return to greatness.

[57] M. Laruelle: *In the Name of the Nation: Nationalism and Politics in Contemporary Russia*, New York : Palgrave Macmillan, 2009.