Andrei Sakharov: Nauka i svoboda, and: Sakharov: A Biography

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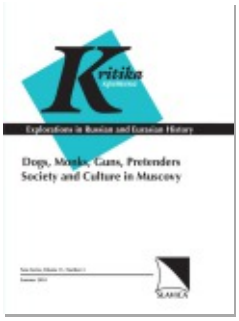

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Gennadii Efimovich Gorelik, *Andrei Sakharov: Nauka i svoboda* [Andrei Sakharov: Science and Freedom]. 512 pp. Moscow: Nauchno-izdatel´skii tsentr "Reguliarnaia i khaoticheskaia dinamika," 2000. ISBN 5939720196.

Richard Lourie, *Sakharov: A Biography*. 466 pp. Hanover, NH: Brandeis University Press/University Press of New England, 2002. ISBN 1584652071.

Matthew Evangelista

Andrei Sakharov—ingenious inventor of weapons of mass destruction and tireless defender of human rights—seems a daunting subject for a biography, and not just because of such apparent contradictions. Exiled to Gor´kii (Nizhnii Novgorod) in the 1980s after protesting the Soviet invasion of Afghanistan, Sakharov spent much of his time there writing his memoirs—starting over from scratch more than once, because the KGB kept confiscating his manuscripts. According to his English-language translator, Richard Lourie, who actually helped smuggle parts of the work out of the country, the first draft ran to some 900 handwritten pages. What could a biographer add to the life story of someone who had so conscientiously and meticulously recorded it himself?

Lourie's publisher advertises his book as "the first biography of one of the greatest Russians of the Twentieth Century." Few would quibble with the second part of the blurb, but even if we disregard Sakharov's *auto*biography and the many reminiscences of his family, friends, and colleagues, we must credit Gennadii Gorelik with the first full biography of Sakharov—an impressive piece of scholarship published two years before Lourie's also impressive study. Both, not surprisingly, rely on Sakharov's memoirs as their main source; and, indeed, many of the most telling and amusing anecdotes come directly from there. Both also acknowledge a substantial debt to David Holloway's magisterial *Stalin and the Bomb* for the basic history of Soviet nuclear physics, the weapons program, and a key insight—that development of nuclear weapons afforded the physicists a certain protection that was fatally lacking for many of their fellow scientists, in the field of genetics, for example.[1]

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[1] David Holloway, *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939–1956* (New Haven: Yale University Press, 1994).

Each author follows a straightforward periodization of Sakharov's life: childhood and education in Moscow (home-schooled until he was 12), with temporary evacuation and military-related research during the war; work in the Soviet nuclear weapons program from 1949 to 1968, when his "Reflections on Progress, Peaceful Coexistence, and Intellectual Freedom" was published abroad, and his first wife fell fatally ill; civilian scientific work and political activity in the human-rights movement, where he met his second wife, Elena Bonner, 1969–79; exile in Gor´kii, where he conducted a number of hunger strikes, worked on his memoirs, and managed to maintain some of his scientific contacts, 1980–86; and return to Moscow, on Mikhail Gorbachev's initiative, and to the politics of the *perestroika* period, where barely two years later, in December 1989, a heart attack killed him in his sleep.

Thanks to Elena Bonner's research, both authors are able to report a fair amount about the history of the Sakharov family before "Andrusha" was born.[2] The Sakharov men had been Orthodox priests in the province of Nizhnii Novgorod for generations, one of them having led the church at Arzamas in the mid-19th century. Andrei's grandfather Ivan broke that tradition by moving to Moscow to study law. He became involved in politics as a founding member of the Constitutional Democratic Party, bought a six-room apartment on Granatnyi pereulok, and edited a collection of essays, including a famous one by Lev Tolstoi calling for the abolition of capital punishment. After the Bolshevik Revolution, Andrei's father Dmitrii, although politically suspect, managed to find employment teaching physics and some financial success as a writer of popular science books. His wife, Katia, was of aristocratic Greek and Tatar background, the daughter of a tsarist general who retired fortuitously in October 1917. The Sakharovs spent the difficult years of civil war at Tuapse on the Black Sea. They returned to their Moscow apartment, now turned into a *kommunalka* and shared with four other families, where Andrei was born in 1921.

Neither biographer fails to note the curious connections in Andrei's prehistory. Lourie points out that Granatnyi pereulok (Grenade Lane) got its name from the cannonball manufacturers of 16th-century Moscow, "a suspiciously propitious address for the future 'father of the H-bomb' " (24). Sakharov's actual address while he was working on Soviet nuclear weapons was a state secret, but the Installation (*Ob"ekt*, in Russian), as he refers to it in his memoirs, was located in the complex called Arzamas-16, not far from the ancestral Sakharov home in Nizhnii Novgorod oblast´. Both authors link Tolstoi's sentiment, expressed in the title of his essay for Ivan Sakharov's volume, "I Cannot Keep Silent," to Andrei's frequent self-query, "If not me, who

[2] Elena Bonner, *Vol´nye zametki k rodoslovnoi Andreia Sakharova* (Moscow: Prava cheloveka, 1996).

else?" His personal commitment compelled him into actions that the Soviet government ultimately countered by sending him into bitter exile—back to Nizhnii Novgorod (Gor´kii).

Given how much Sakharov, Bonner, and others have already written, what is the "value added" of these two biographies? Quite a lot, in fact. Each author provides a certain background and context lacking in Sakharov's own account, and each focuses on a different aspect of his life. In that respect, the biographies complement each other nicely. Lourie conveys the drama and complexity of Soviet history for a non-specialist readership, bringing to bear his considerable knowledge of Russian literature and Soviet-era politics. Typical of his skill at retrieving the well-chosen *mot* is his evocation of the culture of *samizdat* with a quotation from Vladimir Bukovskii: "I write it myself, censor it myself, print and disseminate it myself, and then I do time in prison for it myself" (186). With the eye of the novelist that he is, Lourie catches the nuances of personal relationships: within the sometimes fractious dissident movement; between Sakharov and his former colleagues still doing "special work" (*spetsrabota*) for the military; and within Sakharov's and Bonner's families—divided between Newton, Massachusetts, and Moscow, and divided in their loyalties. Lourie has read widely and interviewed many of Sakharov's friends, family, and colleagues.

Gennadii Gorelik's study does not slight the personal dimension of Sakharov's life, but its main strengths lie elsewhere. It is a serious work of scholarship, based on more than 50 interviews with people from all stages of Sakharov's life, in the United States as well as Russia; extensive research into the Academy of Sciences archives and KGB materials (including transcripts of the tapes made from bugging Sakharov's apartment); and impressive command of the secondary literature on the history of the U.S. nuclear weapons program. It is a carefully documented study, meeting high standards of historical scholarship, with over 600 reference notes and reproductions of wonderful photographs, press clippings, and documents.[3]

A physicist by training, Gorelik was a junior colleague of Sakharov's and attended his seminars at FIAN (*Fizicheskii institut Akademii nauk im. P. N. Lebedeva*) in the 1970s. By his own account, he was drawn into the history of Russian science when he discovered some "prophetic, underestimated" work on the origins of the universe, undertaken by a young Soviet physicist in 1936 (13). He realized that a historian of Soviet science must also become a historian of Soviet politics, culture, and society. The young physicist, Gorelik found out, was arrested in August 1937 during the Great Terror and perished with a bullet through his head in a Leningrad prison. His widow, Lidiia Korneevna

[3] By contrast, Lourie's study deploys the phrase- and sentence-linked reference system so beloved of trade publishers, which nevertheless leaves many readers wondering about the sources for all those other sentences that have no references.

Chukovskaia, offered Gorelik a window on Soviet society of the 1930s, when physicists and poets (such as Chukovskaia's father) shared a common bond as members of the intelligentsia and faced the common threat of Stalinist repression. Chukovskaia—whose family circle had included Pasternak, Akhmatova, and Solzhenitsyn as well as Sakharov, and who herself had been expelled for political reasons from the Union of Soviet Writers—provided insights into the dissident culture of the Brezhnev era.

Gorelik describes his book as motivated by the question "how the 'father of the Soviet hydrogen bomb,' a theoretical physicist who had done more for the military might of the USSR than probably anyone, became the main defender of human rights in the country" (8). But this question, for Gorelik, cannot be understood outside the broader context of the relationship of the Russian *intelligent* to the West. Setting that stage takes up nearly a quarter of his book, with Sakharov hardly mentioned during the first 100 pages or so. Most of these pages consist of a well-researched and engagingly written history of Russian physics. Yet it is still more than that. Gorelik's study provides support for Lourie's observation that "though the intelligentsia could be divided into scientific and humanistic, any engineer was expected to (and could) quote the lines of poetry that were for him both beauty and words to live by" (28). Gorelik's study is interspersed with poetry and literary allusions (at one point he compares Sakharov to Pierre Bezukhov in Tolstoi's *War and Peace*). He quotes Maiakovskii, Akhmatova, and, of course, Pushkin. Gorelik makes much of Sakharov's connection to Pushkin, recalled by Sakharov's schoolmates and colleagues, and reinforced on the impressionable 15-year-old by the Stalin regime's celebration of the centenary of the poet's death—in 1937, naturally.

Pushkin and poetry figure also in Sakharov's first public act of dissent in 1966. To commemorate Constitution Day, "a little before six in the evening on December 5 people would gather around the base of Pushkin's statue on Pushkin Square, the last great square on Moscow's main thoroughfare, Gorky Street, before Red Square itself. At the stroke of six everyone would remove their hats and observe a minute of silence out of respect for the Constitution and solidarity with political prisoners" (Lourie, 187–88). Gorelik points out that the ones who did not remove their hats thereby identified themselves as KGB agents. What Lourie describes as "the mildest of all possible demonstrations" was quite an ingenious idea, the product of the fertile mind of the mathematician Aleksandr Esenin-Volpin, son of the poet Sergei Esenin. Esenin-Volpin's insight, "to always act in accordance with the Soviet Constitution and call on the authorities to do the same" (Lourie, 185)—provided perhaps the most effective strategy underpinning the human rights movement in the Soviet bloc.[4]

[4] Daniel C. Thomas, *The Helsinki Effect: International Norms, Human Rights, and the Demise of Communism* (Princeton, NJ: Princeton University Press, 2001).

The core of Gorelik's book consists of seven chapters under the heading "The Nuclear Archipelago." The author discusses in detail Sakharov's contributions to the development of thermonuclear weapons, which earned him several state prizes and election directly to full membership in the Soviet Academy of Sciences at the unprecedented age of 32; his concern about the health effects of atmospheric nuclear tests, which brought him into conflict with the Soviet leadership; and his promotion of a mutual ban on anti-ballistic missile (ABM) systems—an idea that, Gorelik claims, Sakharov developed independently of U.S. physicists Hans Bethe and Richard Garwin, who published an article in *Scientific American* advocating an ABM moratorium in 1968.[5] Unlike Sakharov, who allotted separate chapters in his memoirs to technical details of his work in physics, Gorelik deftly combines the technical and political discussions in a way that causes little heartburn to a non-scientist. Gorelik devotes less, but still considerable, attention to Sakharov's career as a dissident (Sakharov himself preferred the label "freethinker"). For the *perestroika* period, he quotes Sakharov to the effect that every day seemed like three and suggests that an entire other book would be necessary to cover those events adequately.

Fortunately, Lourie takes up much of that task. He devotes about half of his book to Sakharov's activist work with Bonner, and a long, lively chapter on his short career as the moral compass of the democratic movement in the Congress of People's Deputies, to which he was elected by his constituency at the Academy. Lourie evokes the despair and repression of the Brezhnev era as effectively as he does the hope and wonder of Gorbachev's *perestroika*. He recounts the attempted intimidation of Bonner and Sakharov by KGB agents, who often took out their frustrations on the family automobile—including once when Andrei was in it and was knocked unconscious by gas while the agents smashed the car window and stole his manuscript once again. Lourie skillfully depicts the Sakharovs' grim determination in their hunger strikes, even when fellow activists thought their goals (such as the immigration of Bonner's daughter to join her fiancé in the United States) not worth the risk of their loss to the movement—as well as the force-feedings and heart attacks they endured.

What motivated Sakharov—a man who enjoyed all the privileges that Soviet authorities could bestow—to break with the regime at such a high cost? Indifference to some of those privileges, such as the financial rewards, probably helped. In 1953, upon the successful test of his "layer cake" design for

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[5] In fact, proposals for a moratorium emerged already in the first half of the 1960s, in informal discussions between Soviet and U.S. physicists. As early as 1956, Petr Leonidovich Kapitsa published an article containing some of the insights behind Sakharov's later proposal. See Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Ithaca, NY: Cornell University Press, 1999), chaps. 6 and 10.

a thermonuclear weapon, Sakharov was awarded the Stalin Prize, including a sum of 500,000 rubles, the equivalent, as Gorelik (211) points out, of 40 annual doctor's salaries. But Sakharov and his family lived modestly and took less advantage of their status than they could have done. When Sakharov's first wife died, he gave away his life's savings, some 139,000 rubles—about 30 years of a FIAN physicist's annual pay (Gorelik, 404; Lourie, 215)—donating them to a children's center at the Installation, to the construction of a cancer hospital, and to the Soviet Red Cross. Sakharov later came to regret his impulsive generosity when he could have used the money to support the families of political prisoners, including his own.

Lourie finds part of the motivation for Sakharov's human-rights activism in the fact that he "was unambiguously born into a specific social grouping, something between a class and a clan: the intelligentsia, educated people whose sense of honor and duty compels them to take action against injustice" (27). Gorelik, who also ties Sakharov's fate to his status as an *intelligent*, nevertheless reminds the reader of a Russian saying—*odin v pole ne voin* (one man in a field is not a warrior)—all the same pointing out that Sakharov, in the pursuit of many lost causes, failed to heed the saying himself (457).

Gorelik, as he stated at the outset, is interested not only in explaining Sakharov's humanitarianism but also in how to square that impulse with his nearly 20 years of service building weapons of genocide for the Soviet dictatorship. Sakharov is a fascinating subject for biography precisely because of such contradictions. Gorelik, more clearly than Lourie, makes the point that Sakharov's drive to influence Soviet policy for the public good predates the Pushkin Square demonstration and had many antecedents. Within this category falls Sakharov's preoccupation with the health risks of nuclear radiation, caused by fallout from the enormous thermonuclear tests, his defense of Lake Baikal, and his contribution to the defeat of a Lysenkoist candidate for the Academy. Of these, Sakharov's campaign against nuclear testing was clearly the most significant. His precise calculations of the long-term impact of dispersed carbon 14 convinced Sakharov that over the course of thousands of years, the genetic defects caused by radioactive fallout would produce suffering and death for thousands of people. He took his campaign for a moratorium on nuclear tests to the highest levels of the Soviet nuclear establishment and more than once to Nikita Khrushchev himself.

Every new test made him distraught. Sakharov exerted tremendous efforts to stop the test of the so-called Big Bomb (*Tsar'-bomba*) in October 1961. The 57-megaton monster (capable of a yield nearly twice as large) was a weapon for which the Soviet high command had identified no military purpose, but which Khrushchev had hoped to use to intimidate the West over Berlin. Lourie claims, plausibly, that the bomb also helped Khrushchev in his de-Stalinization campaign—"Khrushchev had used the authority of Sakharov's Big Bomb to oust Stalin from Lenin's tomb" (171)—but he

provides no evidence. Sakharov had opposed the test, despite any putative political benefits, because, as he wrote in his memoirs, "I had come to regard testing in the atmosphere as a crime against humanity, no different from secretly pouring disease-producing microbes into a city's water supply."[6]

The bizarre coda to the Big Bomb story is Sakharov's subsequent behavior. He accepted a kiss from Khrushchev and his third Hero of Socialist Labor award for his work on the design, even though some had sought to deny him the prize because of his opposition to testing the bomb itself. Then, "concerned that the military couldn't use it without an effective carrier," he "dreamed up the idea of a giant torpedo, launched from a submarine and fitted with an atomic-powered jet engine that would convert the water to steam. The targets would be enemy ports several hundred miles away…. When they reached their targets, the 100-megaton charges would explode both underwater and in the air, causing heavy casualties." When Sakharov proposed the idea to a senior naval officer, the admiral "was shocked and disgusted by the idea of merciless mass slaughter, and remarked that the officers and sailors of the fleet were accustomed to fighting only armed adversaries, in open battle."[7] Why was Sakharov's conscience troubled by the prospect of thousands of genetic defects over the course of eight millennia but not by the prospect of hundreds of thousands of instantaneous deaths of innocent civilians in a nuclear-torpedo attack against a city?

Gorelik seems to pursue a similar line of inquiry when he asks not why Sakharov emerged as a defender of human rights but why he kept working on weapons for so long, even after he had joined the dissidents on Pushkin Square. Why, asks Gorelik, did Sakharov not return to pure science along with his teacher, Igor′ Tamm, after the successful test of the "layer cake" device in the autumn of 1953 (212)? Why did he not leave in 1962, after his efforts at maintaining a test moratorium had so literally gone up in smoke? Gorelik reports that Sakharov thought he could still do something about the danger of radioactive fallout (295), and in a sense he was right. Sakharov's concerns, added to a worldwide movement of opposition to atmospheric testing, led to a suggestion by Viktor Adamskii, his colleague at the Installation, to accept the U.S. proposal for a limited test ban that would not require the stringent verification measures of a comprehensive one. The Moscow Treaty was signed in August 1963, and the nuclear arms race continued under ground and at an accelerated pace—but at least without the scourge of radioactive poisoning of the air.[8] So why, asks Gorelik, did Sakharov not quit the bomb business then, following his long-time friend and fellow weapons

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[6] Andrei Sakharov, *Memoirs* (New York: Knopf, 1990), 225.

[7] Ibid., 221.

[8] Evangelista, *Unarmed Forces*, 82–89.

designer Iakov "Zel´dovich, who in 1964 left for the Academy of Sciences?" Sakharov's answer—that "my presence at the Installation at some difficult moment could prove decisively important"—seems unconvincing to Gorelik. The only example of Sakharov's influence in moderating Soviet policy was his support of a limited test ban, but even then, could it be considered decisive? (329). The mystery remains why Sakharov left the weapons business only when his superiors kicked him out in response to his political activities.

Gorelik suggests a reason why Sakharov stayed at the Installation: the work appealed to him. He quotes two of Sakharov's colleagues who recorded his comment on the design of the enormous Big Bomb, whose testing he had vehemently opposed: "from a physics standpoint, it was beautiful" (*fizicheski krasivo*). Gorelik is reminded of the scientist from Kurt Vonnegut's novel *Cat's Cradle*, who is so entranced with the technical challenge of creating Ice-9 that he is willing to freeze everything on earth if he succeeds (287). Sakharov's biographers are both reminded of J. Robert Oppenheimer's remark when he encountered a proposed design for a hydrogen bomb (similar to Sakharov's) conceived by Edward Teller and Stanislav Ulam—that it was "technically so sweet," it had to be pursued. Oppenheimer had opposed development of the "Super," not primarily on moral grounds, but because he saw it as technically unpromising and as unwelcome competition for his preferred program to develop fission weapons for "tactical" uses. Once he grasped the implications of the Teller/Ulam design, he dropped his opposition.[9] Fascination with technical challenges and elegance of design clearly have something to contribute to understanding Sakharov's motives. He once described the thermonuclear explosion as "paradise for a theorist" (Gorelik, 298). When, at age 67, he was finally allowed to leave the Soviet Union for a visit to the United States, Elena Bonner asked him what he would most like to do there. He replied that he would like to meet Stanislav Ulam and figure out with him how they had both come to the same solution to the challenge of building a thermonuclear bomb (Gorelik, 237).

Sakharov was respected for his theoretical contributions to such topics as baryon asymmetry and elementary particle physics, and everyone who met him sensed a keen intelligence. But Gorelik implies that Sakharov experienced doubts about his talents as a pure theorist. Similar doubts were expressed by his fellow physicists. Vitalii Ginzburg, after hearing one of Sakharov's pure-science ideas, "burst out laughing and said, 'So you're not only a bomb-maker [*bombochka*], you want to do physics too!' " (Gorelik, 296). Sakharov, who reported the comment in his memoirs, seems to have taken it to heart. The great Soviet physicist Lev Landau made a similar evaluation of Sakharov in

[9] Matthew Evangelista, *Innovation and the Arms Race: How the United States and the Soviet Union Develop New Military Technologies* (Ithaca, NY: Cornell University Press, 1988), 106–12.

1953 when asked his opinion of the young theoretical physicist who had just been elected to the Academy. "What kind of theoretician is he? He's a physicist-inventor!" (Gorelik, 295). If Sakharov shared such doubts about his prospects as a pure theorist, they may have contributed to keeping him involved in practical work, but they still fail to explain his two decades' commitment to nuclear-weapons development. Some talented physicists, such as Roald Sagdeev, managed to avoid weapons work; while others, like Tamm, got out as soon as they could.[10]

Gennadii Gorelik clearly admires and respects Andrei Sakharov, but it is not obvious that he shares Richard Lourie's evaluation of him as "a person of greater intelligence and virtue than anyone I have ever encountered" (451). Gorelik's research into the lives of other Soviet physicists—such as Petr Kapitsa, Vladimir Vernadskii, and Lev Landau (the subject of his next book)—suggests that Sakharov's disillusionment and eventual opposition to the Soviet regime were rather late in coming compared to his freethinking seniors. None of them, however, risked death, as Sakharov did in his hunger strikes, to promote basic individual freedoms—but nor did they spend decades creating weapons of mass destruction. The image of Andrei Sakharov that emerges from these fine biographies is of the physicist and human-rights activist not as a saint but as a human being.

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[10] Roald Sagdeev, *The Making of a Soviet Scientist* (New York: John Wiley, 1994).