David Holloway: Remarks for Cambridge (5/21/21)

Introduction

Andrei Dmitrievich Sakharov's life is often viewed as consisting of two stages – his life as a physicist (as a designer of nuclear weapons) and his life as a defender of human rights, for which he received the Nobel Peace Prize in 1975. These two stages are sometimes seen as disconnected, even irreconcilable, but that is not the case, as my colleagues have made clear.

Sakharov joined the Soviet nuclear project in 1948 at the age of 27. From 1950 to 1968 he worked at Arzamas-16 (the Soviet Los Alamos, now Sarov) where he played a key role in the development of the Hydrogen Bomb. He believed that the Soviet Union needed nuclear weapons of its own to balance the nuclear weapons of the United States and that, besides, it was not safe for the world to have just one nuclear weapon state.

In November 1955 the Soviet Union tested its first two-stage thermonuclear weapon, based on principles that made possible bombs of almost unlimited destructive power. Sakharov played a leading role in the design of that bomb, and it marked a turning point in his life. He later recalled that the destruction caused by the explosion had triggered "an irrational yet very strong emotional impact. How not to start thinking of one's responsibility at this point?"

Stopping nuclear tests

One way in which Sakharov exercised that responsibility was by trying to shape Soviet nuclear weapons policy. Gennady Gorelik has already talked about Sakharov's intervention on ABM defense. Let me mention briefly an earlier example. Sakharov became very concerned about the non-threshold biological consequences [such as carcinogenesis and genetic change]

of the radioactive fallout from nuclear testing. In March 1958 Khrushchev declared a moratorium on testing, but then decided to start testing again in September. When Sakharov learned of this, he prepared a proposal arguing that the Soviet Union should continue the moratorium for another year. He went to Moscow to see Igor Kurchatov, who supported the idea. On the following day, Kurchatov flew to Yalta to talk to Khrushchev, who rejected the proposal. The Soviet Union resumed testing, but in October it joined the US and Britain in a moratorium that lasted almost three years.

In the summer of 1961, at the height of the Berlin crisis, Khrushchev decided to end the moratorium. Nuclear tests, he explained, would be a "good means of pressure on the West." In July he told a meeting of the leading nuclear weapons scientists that testing would be resumed. During this meeting, Sakharov sent a note to Khrushchev urging him not to do that. Khrushchev became angry. Sakharov, he said was poking his nose in where it didn't belong. "You can be a great scientist without understanding a thing about politics," he said. "Leave politics to us – we're the specialists. You make your bombs and test them, and we won't interfere with you, we'll help you. But remember, we have to conduct our policies from a position of strength." In the last four months of 1961 the Soviet Union conducted 60 nuclear test explosions including a test of the 100 MT bomb that Sakharov had helped to design. [5,000 x the Nagasaki bomb.] The design was altered for the test, so that the yield would be 50 MT, but that was still the most powerful nuclear test explosion ever.

Negotiations between the Soviet Union, the United States, and Britain on a comprehensive test ban ran into difficulties over the monitoring and verification of underground tests. In the spring of 1963 one of Sakharov's colleagues at Arzamas-16, Viktor

Adamskii, drafted a letter to Khrushchev supporting a partial test ban. He discussed this with Sakharov, who traveled to Moscow to give the letter to Efim Slavskii, the minister responsible for the nuclear weapons industry. Khrushchev adopted the idea. The Limited Test Ban Treaty, which prohibits nuclear weapons tests in the atmosphere, in outer space, and under water, was signed by the United States, the Soviet Union, and Britain on August 27, 1963.

Sakharov received word from Slavskii that his proposal had elicited great interest at the top. His intervention helped to lead to the Limited Test Ban Treaty.

The Turning Point

In July 1967, Sakharov wrote to Politburo member Mikhail Suslov asking for permission to publish an article on missile defense in *Literaturnaia Gazeta*, but Suslov refused permission. (Gorelik has already spoken about this, but I want to make just one point about it.) In that article Sakharov wrote that the question of a moratorium on anti-missile defenses "belongs to the category of highly sensitive matters that are difficult to discuss openly, but it is more important than ever to begin such a discussion." He was coming increasingly to the view that sound policies had to be based on open discussion. He expressed that very clearly in his *Reflections on Progress, Peaceful Coexistence, and Intellectual Freedom*, which he wrote in the early months of 1968. In the opening paragraph Sakharov wrote that his views were formed in the milieu of the scientific-technical intelligentsia, which was very worried about the future of humanity. Their concern, he continued, was all the stronger because what he called "the scientific method of directing politics, economics, art, education, and military affairs" had not yet become a reality. What did he mean by the "scientific method" in this context? His answer: "We consider 'scientific' that method which is based on a profound study of facts, theories,

views, presupposing unprejudiced and open discussion, which is dispassionate in its conclusions."

Sakharov took science as a model for politics. His conception was that the state should be guided in its actions by civil society, or more specifically by a public opinion formed in the process of open discussion and reasoned debate. In this conception, the exercise of power is no longer the mere expression of the sovereign's will (in the Soviet case, the will of the Party leadership) but is grounded, like science, in reason.

When *Reflections* was published abroad, Sakharov was quickly removed from secret work. He was able to do physics, though now his time was increasingly devoted to civic activities. He lent his enormous prestige as a three-times Hero of Socialist Labor to support those suffering from political repression. His engagement with human rights grew stronger after his meeting Elena Bonner in 1970 and their marriage two years later.

In 1975 Sakharov was awarded the Nobel Peace Prize for his work for human rights. In his Nobel lecture, *Peace, Progress, and Human Rights*, he stressed the importance of human rights, naming over one hundred of the political prisoners being held in the Soviet Union. He also made the general point that peace, progress, and human rights were indissolubly linked. For progress to be beneficial and peace secure, human rights (freedom of conscience, freedom of assembly, freedom of expression etc.) had to be protected.

The World in Half a Century

In 1974, Sakharov wrote essay on "The World in Half a Century." The opening sentences are as relevant today as they were forty years ago:

> Everyone who starts to think about the future of the world after fifty years –
> about that future in which our grandchildren and great-grandchildren will live –

> is seized by powerful and contradictory feelings. These are despondency and terror before the tangle of tragic dangers and difficulties in the immeasurably complex future of the human race, but at the same time hope in the power of reason and humanity in the souls of billions of people, which alone can resist the approaching chaos. The multifaceted and irrepressible scientific and technological progress of modern times also evokes a feeling of admiration and the liveliest interest.

Sakharov advanced a number of "futurological hypotheses" including a world information system and economic exploitation of the moon. Scientific and technological progress was inevitable: only a general thermonuclear war, famine, epidemics, or general destruction could turn progress back – and it would be mad to wish for that.

But Sakharov's enthusiasm for science and technology was balanced by trepidation about the future. "Scientific-technical progress will not bring happiness," he writes, "if it is not complemented by extraordinarily profound changes in the social, moral, and cultural life of humanity." The most important unknown, in Sakharov's view, was the possible death of civilization and even of the human race in a thermonuclear war, but there were other ways in which the human race could perish: it was threatened, he believed, by a decline in personal and state morality.

What could overcome these negative trends? Sakharov named several desirable changes: overcoming the division of the world into antagonistic blocs through a process of convergence; demilitarization and the strengthening of international trust; defense of human rights, the law and freedom; profound social progress and democratization; and the strengthening of the moral, spiritual personal principle in human beings. The main thing, however, was human rights. "I want once more to emphasize that the struggle for human rights is today the real struggle for peace and the future of humankind," he wrote.

Moral reasoning and practical purpose

Some of the political changes Sakharov hoped for in his 1974 essay have come to pass – the end of the Cold War; and greater activity by NGOs on human rights and the environment; the spread of democracy, though that has been going into reverse. The world is much more open today than it was forty-seven years ago, but are still confronted by dangers of the kind Sakharov wrote about: nuclear war; climate change; epidemics; hunger; small wars – dangers that cannot be addressed by individual states alone and require international cooperation.

In thinking about those dangers three issues that Sakharov addressed are worth bearing in mind. The first is the relationship between science and politics. Sakharov wrote to political leaders recommending particular courses of action, but later concluded that that was not enough: there had to be public discussion and understanding of the issues. The key issue is not the individual scientist's responsibility – important though that is – but the scientific community's contribution to our ability to deal with the enormous challenges we face, many of which are, at least in part, the consequence of scientific and technological progress. How well organized are we to do this? This has been an absolutely crucial issue in the current pandemic.

The second issue relates to the first: the integrity of science and scientists. Sakharov was well aware that science did not always conform to his ideal: he had voted against the election of a Lysenkoist to the Academy of Sciences because of the damage Lysenko had done to Soviet biology. A not very flattering view of science can be found in Soviet dissident writings of the 1970s. Slanderer (klevetnik), a character in Aleksandr Zinoviev's satirical novel *The Yawning Heights*, expresses the view that careerism has created a "moral and psychological atmosphere in science which has nothing in common with those idyllic pictures one can find in

the most critical and damning novels and memoirs devoted to the science of the past." The émigré science journalist Mark Popovsky painted a similar picture, which Sakharov believed contained an important element of truth. That raises questions that apply not only to the Soviet Union: How is science to maintain its integrity? How is it to maintain its authority, so that it can be effective in responding to the challenges we face? That too has become an extremely salient issue. [Trump: My opponent believes the scientists.]

The third issue has to do with ethics. In his famous essay on "Politics as a Vocation," Max Weber drew a sharp distinction between an "ethics of principle" and an "ethics of responsibility." "There is a profound contrast," he wrote, "between conduct that follows the maxim of an ethics of principle – that is, in religious terms, 'The Christian does the right thing and leaves the results to the Lord' – and conduct that follows the maxim of an ethics of responsibility, in which case one has to give an account of the foreseeable results of one's action." There is no evidence that Sakharov ever read Max Weber, but in working to develop nuclear weapons Sakharov believed that he was helping to prevent large-scale war. This was surely an example of Weber's Ethics of Responsibility, in which one has to focus on the consequences of one's actions. Sakharov was helping the state to use immoral means (threatening to kill millions of people) in the pursuit of a good end (i.e. peace) – though he did believe the respite had to be used. In his struggle for human rights, however, Sakharov adopted a principle closer to Weber's "Ethics of Principle." You do the right thing because the consequences of your actions are out of your hands. In his memoirs he wrote: "life's causal connections appear so abstruse that pragmatic criteria are often useless; we must rely on our moral code."

Conclusion

Three final points. First, 1968 was a turning-point in Sakharov's life, but not a "road to Damascus" experience. Sakharov did not renounce, or apologize for, the work he had done to develop nuclear weapons. There was a progression in his thinking from (1) working on nuclear weapons because he believed his country needed them; (2) working to mitigate the harmful effects of nuclear testing and to prevent the destabilizing effects of ABM systems; (3) encouraging public discussion of complex issues related to scientific and technological progress; (4) arguing that scientific-technical progress had to be guided by reason; (5) that only human rights could provide the conditions for reasoning to take place. These were the significant steps on Sakharov's path to the struggle for human rights.

Second, scientists have a special moral responsibility by virtue of their knowledge and their commitment to evidence and to reason. In that sense, one might say that Sakharov exercised his responsibility in the predictable (though still extraordinary) manner of a scientist with a powerful sense of responsibility. But his sense of responsibility had another important source. In his memoirs, Sakharov quotes a passage about the 19th century Russian intelligentsia, which "possessed firm principles based on spiritual values." That milieu produced revolutionaries, poets, and engineers, "convinced that the most important thing is to build something, to do something useful." Sakharov writes that he was fortunate to come from a family that embodied those values. In that sense, he was a quintessential representative of Russian culture.

Third, the human rights that Sakharov struggled to defend and promote are still greatly in need of promotion and defense, not only in Russia but around the world. His moral compass

is greatly missed. A Swedish journalist asked him in 1973: "You are doubtful that anything in general can be done to improve the system of the Soviet Union, yet you yourself go ahead acting, writing declarations, protests -- why?" Sakharov replied: "Well, there is a need to create ideals even when you can't see any route by which to achieve them, because if there are no ideals then there can be no hope and then one would be completely in the dark, in a hopeless blind alley." His example is what makes it so important to celebrate his memory.