
Beria, Bohr, and the Question of Atomic Intelligence

David Holloway

One of the consequences of the Soviet Union's collapse has been the appearance of new evidence about Soviet history. Secret documents are being made public, archives are becoming accessible to scholars, and memoirs are being published by some of the key figures in the Soviet regime. All this is exciting for the student of Soviet history, who is now able to study the Soviet experience in quite a new way.

The new evidence is not without its problems, however, and needs to be handled carefully. Some of the problems became apparent in the spring of 1994, with the publication of *Special Tasks: The Memoirs of an Unwanted Witness — A Soviet Spymaster*.¹ This volume has considerable potential importance, for it contains the memoirs of Pavel Sudoplatov, who had a long and eventful career in the Soviet police apparatus. He took part in operations against Ukrainian emigre groups, organized the assassination of Trotsky, directed sabotage operations against German forces in World War II, and became involved in atomic espionage after the war. In 1953 he was arrested shortly after Lavrentii Beria, and spent the next fifteen years in prison.

The Sudoplatov volume received considerable publicity when it was published in the United States. Its claim that "the most vital information for developing the first Soviet atomic bomb came from scientists designing the American atomic bomb at Los Alamos, New Mexico - Robert Oppenheimer, Enrico Fermi, and Leo Szilard" attracted particular attention.² The initial reaction in the media to this charge was quite uncritical. *Time* published a lengthy excerpt from the book,

and the McNeil-Lehrer News Hour devoted a long segment to it; neither the magazine nor the TV program questioned the statement that eminent physicists had knowingly passed secret information to the Soviet Union.³ It is not surprising that this claim attracted attention; it is perhaps surprising that the initial attention was so uncritical. Before long, however, physicists and historians leapt to the scientists' defense.⁴

All memoirs present problems as historical sources. Memoirists may have faulty memories, and are prone to exaggerate their own role in history. The Sudoplatov volume is no exception and indeed presents special problems. It was written not by Sudoplatov alone, but with the assistance of his son and two American journalists. Quite how the book was put together is not clear. It appears that Sudoplatov was interviewed, and the manuscript compiled on the basis of these interviews. But much additional material seems to have come from his co-authors, especially in the chapter on atomic spies. Moreover, the book was written without the cooperation of the KGB, so that there was no opportunity to check Sudoplatov's memory against KGB files.⁵

I do not wish to review here the debate about the Sudoplatov book. I want instead to focus on one episode that deserves further analysis. The book describes how Sudoplatov sent a young Soviet physicist, Iakov Terletskii, to Copenhagen in November 1945 to put questions to the great Danish physicist Niels Bohr about the atomic project.⁶ This episode merits further attention in the light of new evidence that has appeared since Sudoplatov's book was published.

The Sudoplatov volume says several things about Niels Bohr. It claims that he "helped strengthen" the inclination of Oppenheimer, Fermi, and Szilard to "share nuclear secrets with the world academic community."⁷ It reports that in 1943 the Soviet physicist Peter Kapitsa "bombarded Stalin and Beria with suggestions that they invite [Bohr] to head our atomic project and even wrote to Bohr asking him to come to the Soviet Union for just that purpose."⁸ The book notes that Bohr was invited to the Soviet Embassy in London to meet Anatolii Gorskii, the NKVD resident (or chief), who was a counsellor at the embassy. "Bohr avoided any direct discussion of nuclear developments," the book continues, "but later on several occasions he urged President Roosevelt to share atomic secrets with the Soviet Union."⁹ It also claims that Bohr's ideal was to have a joint team of Soviet, American, and British scientists to build the bomb.¹⁰ Finally, the book reports that the first Soviet reactor had been built by November 1945, but could not be put into operation. Sudoplatov sent Terletskii to Copenhagen to ask Bohr for help. "Bohr readily explained to Terletskii the problems Fermi had at the University of Chicago putting the first nuclear reactor into

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operation," the book states, "and he made valuable suggestions that enabled us to overcome our failures."¹¹

The Bohr-Kapitsa Correspondence

Niels Bohr was one of the greatest physicists of the twentieth century.¹² He made fundamental contributions to the development of quantum mechanics and nuclear physics. His institute in Copenhagen was a leading center of physics in the interwar period, and physicists from all round the world spent time working there. Bohr strove to maintain the international ties of physicists and visited the Soviet Union several times in the 1930s.¹³ Among Soviet physicists he knew Lev Landau and Peter Kapitsa well. Landau spent a year at Bohr's institute, and Bohr had come to know Kapitsa while the latter was at Cambridge from 1921 to 1934.

Bohr remained in Copenhagen after Nazi Germany occupied Denmark in April 1940. He escaped in September 1943 to Sweden, after learning that he might soon be arrested. He was then flown by the British to London, where he was informed about the Manhattan project. He was astonished by the progress that had been made in developing the atomic bomb. In November he travelled to the United States where he visited Los Alamos.¹⁴

Bohr did not oppose the development of the atomic bomb, or its use in the war. But he quickly became concerned about the danger of a postwar nuclear arms race between the western powers and the Soviet Union. He had a high opinion of Soviet physics, and did not doubt that the Soviet Union could build its own atomic bomb. He believed that it was therefore imperative for the United States and Britain to inform Stalin about the development of the bomb, without initially divulging technical details. Only in this way might Stalin be persuaded that the United States and Britain were not conspiring against him.

Bohr believed that agreement on international control of atomic energy could be reached only on the basis of mutual confidence. He believed also that the bomb presented an opportunity because the need for cooperation to deal with the danger of the arms race might form the basis for a new approach to international relations.¹⁵ Bohr found considerable support for his ideas among close advisers to Churchill and Roosevelt, including Supreme Court Justice Felix Frankfurter, whom he had met before the war. Bohr had a conversation with Frankfurter about the implications of the atomic bomb during his trip to the United States.

When Bohr returned to London in April 1944 he learned that a letter from Kapitsa was waiting for him at the Soviet Embassy. On

hearing of Bohr's escape from Denmark, Kapitsa had written to invite Bohr and his family to come to the Soviet Union for the duration of the war.¹⁶ Bohr went to the Soviet Embassy to collect the letter from Kapitsa, and while he was there had a general conversation with the official who gave him the letter. He wrote a friendly but non-committal reply to Kapitsa, which was delivered to the Embassy after being cleared by the British security authorities.¹⁷

Kapitsa had obtained permission from V.M. Molotov, the People's Commissar of Foreign Affairs, to invite Bohr to the Soviet Union.¹⁸ Kapitsa made no reference to the atomic bomb in his letter to Bohr, or in the letter to Molotov in which he requested permission to send an invitation to Bohr. Bohr's presence would have done much for Soviet physics and its international standing, and that could have been reason enough for Kapitsa to want Bohr to spend some time in the Soviet Union. It is true that a small atomic project had been set up in the Soviet Union early in 1943, but it is not at all clear that Kapitsa, who was not working on the atomic bomb, would have wanted Bohr to help the Soviet project, much less to head it; in any event he did not invite Bohr to do so. Nor was there anything compromising about Bohr's visit to the Soviet Embassy. Bohr went to the Embassy for a perfectly legitimate reason; and he began to develop his ideas about the need to approach the Soviet Union before that visit. The letter from Kapitsa and his visit to the Embassy did, however, strengthen his suspicion that the Soviet Union might be working on the bomb; this made it more urgent, in his mind, to tackle the danger of a postwar arms race.¹⁹

Bohr, Churchill, and Roosevelt

On May 16, 1944 Bohr met Churchill at Downing Street. The meeting was arranged by Lord Cherwell, Churchill's science adviser, at the instigation of Sir John Anderson, the minister responsible for the British atomic effort, Field Marshal Smuts, and Sir Henry Dale, President of the Royal Society. These men knew of Bohr's concern about a possible nuclear arms race and believed that it would be useful to have him put to Churchill his ideas about the implications of the bomb for postwar politics.

Bohr's meeting with Churchill was a disaster. Dale had expressed to Cherwell his fear that Bohr's "mild, philosophical vagueness of expression and his inarticulate whisper" might prevent him from making a "desperately preoccupied Prime Minister" understand him. Dale's fear was realized. Bohr did not manage to convey his ideas to Churchill, who was preoccupied with the preparations for the impending D-Day landings in Normandy, and had in any event already

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On August 26 Bohr, who had returned to the United States, met Roosevelt, who seemed to be much more receptive than Churchill to his ideas. So well had the conversation gone, in Bohr's view, that he prepared a draft letter to Kapitsa and held himself ready to go to Moscow as an emissary.²¹ But less than a month later, on September 18, 1944, Churchill and Roosevelt met at Hyde Park and signed a memorandum stating that "the suggestion that the world should be informed regarding T.A. [Tube Alloys, the British codename for the atomic project] with a view to an international agreement regarding its control and usage, is not accepted." Informing "the world" was not what Bohr had proposed. Perhaps Churchill and Roosevelt had misunderstood him; perhaps it was easier to reject his ideas by phrasing them in that way. The memorandum also stated that "enquiries should be made regarding the activities of Professor Bohr and steps taken to ensure that he is responsible for no leaks of information, particularly to the Russians."²²

Two days after his meeting with Roosevelt, Churchill sent a note to Lord Cherwell. "The President and I are much worried about Professor Bohr," he wrote.

How did he come into this business? He is a great advocate of publicity. He made an unauthorized disclosure to Chief Justice Frankfurter who startled the President by telling him he knew all the details. He says he is in close correspondence with a Russian professor, an old friend of his in Russia to whom he has written about the matter and may be writing still. The Russian professor has urged him to go to Russia in order to discuss matters. What is all this about? It seems to me Bohr ought to be confined or at any rate made to see that he is very near the edge of mortal crimes. I had not visualized any of this before, though I did not like the man when you showed him to me, with his hair all over his head, at Downing St. Let me have by return your views about this man. I do not like it at all.²³

Cherwell replied on September 23 with a reassuring memorandum about Bohr. He told Churchill that Bohr "is probably the world's greatest authority on the theoretical scientific side." He explained the Kapitsa letter and Bohr's reply, and wrote that Frankfurter had raised the issue of the bomb with Bohr, not *vice versa*:

As you know Bohr like many other people had some rather woolly ideas about using the existence of a super weapon to induce the nations to live in confidence and at peace. It is this aspect which Frankfurter

raised with him and which they discussed, and it is this which I believe Frankfurter may have raised with the President.

I have always found Bohr most discreet and conscious of his obligations to England to which he owes a great deal, and only the very strongest evidence would induce me to believe that he had done anything improper in this matter.

Cherwell pointed out that there had been press speculation about the atomic bomb for six or seven years: "The things that matter are which processes are proving successful, what the main snags are and what stage has been reached. Most of the rest is published every silly season in most newspapers." Before sending his reply to Churchill, Cherwell had an hour's meeting with Roosevelt, Admiral Leahy, and Vannevar Bush. Bohr was discussed at the meeting, but nothing emerged to cause Cherwell to alter any part of his memorandum. "Indeed [the memorandum] was confirmed by Bush in all particulars of which he could be expected to have knowledge," Cherwell wrote. "Bush undertook however to 'check up' on Bohr and I will let you know if any further developments ensue."²⁴ Churchill accepted Cherwell's opinion about Bohr and the matter was dropped.²⁵

Bohr continued to press his views in Washington, but he did not succeed in persuading the United States to make the kind of approach to Stalin that he considered advisable. After Hiroshima, however, he was able to go public with his thoughts on the bomb. On August 11, two days after Nagasaki, he published an article in *The Times* in which he argued for greater openness as a precondition of international control:

The formidable power of destruction which has come within reach of man may become a mortal menace unless human society can adjust itself to the exigencies of the situation. Civilization is presented with a challenge more serious perhaps than ever before....No control [of atomic energy] can be effective without free access to full scientific information and the granting of the opportunity of international supervision of all undertakings which, unless regulated, might become a source of disaster.²⁶

Later in the month, at Frankfurter's suggestion, he published a similar article in *Science*.²⁷

Bohr returned to Denmark at the end of August 1945. The British authorities were worried that the Soviet Union planned to kidnap him. Bohr himself took the view that the Soviet Union would gain little from this, because there were no scientific secrets; the American

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advantage, in Bohr's view, lay in production and production experience.²⁸

Bohr now took steps to renew his contact with Soviet physicists. He wrote to Kapitsa on October 21, 1945, to thank him for a telegram that Kapitsa had sent on October 20 to welcome Bohr back to Denmark. "Now that the war is over with victory for freedom," Bohr wrote:

international cooperation in science which has meant so much to both of us will certainly not only be revived and extended, but I am convinced that it will contribute more than ever to that understanding between nations in which all peoples put faith and for which so promising a background has been created through the comradeship in the defence of elementary human rights.

Bohr enclosed with the letter copies of his articles in *The Times* and *Science*, and suggested to Kapitsa that he might see fit to have them published in the Soviet Union. "I shall be most interested to learn," he added, "what you think yourself about this all-important matter which places so great a responsibility on our whole generation."²⁹

The documentary evidence on Bohr's wartime views is extensive, and it does not support Sudoplatov's assertion that "on several occasions [Bohr] urged President Roosevelt to share atomic secrets with the Soviet Union."³⁰ This characterization of Bohr's activities is quite misleading. Bohr wanted Churchill and Roosevelt to tell Stalin that the bomb was being developed — and he suspected that this would tell Stalin no more than he already knew — because he was afraid that the mistrust engendered by secrecy would make a postwar nuclear arms race more likely. While he foresaw the danger of a nuclear arms race, he believed also that the great danger posed by the bomb might induce governments to cooperate. In the first place it was essential to agree on international control of atomic energy, but this could not be done unless there were an open world in which scientific information was freely accessible and in which the development of atomic energy was subject to international supervision. Hence Bohr's view of the implications of the bomb for international relations embraced a number of interlocking elements that certainly cannot be summed up in the assertion that he wanted Churchill and Roosevelt to share atomic secrets with Stalin.

Terletskii's Visit to Bohr

After Hiroshima Stalin decided to turn the small Soviet atomic project into a crash program. On August 20, 1945 he signed a decree setting up a Special Committee on the Atomic Bomb under the chairmanship of Lavrentii Beria. The two scientists on this committee

were Kapitsa and Igor' Kurchatov, scientific director of the atomic project.³¹ In September, as part of the reorganization of the Soviet project, Beria set up "Department S," under the direction of Pavel Sudoplatov, to serve as a clearing-house for atomic intelligence. Sudoplatov recruited two young physicists to work in his department; one of these was Iakov Terletskii, from Moscow University.³²

On October 22, 1945 — the day after Bohr had written to Kapitsa — Sudoplatov told Terletskii that he was to visit Bohr in Copenhagen. Thus the Soviet authorities had decided to make an approach to Bohr even before Bohr's letter to Kapitsa arrived in Moscow. According to Terletskii's memoir of these events, Bohr had already indicated a willingness to meet Soviet scientists; this is certainly plausible in view of the sentiments expressed by Bohr in his letter to Kapitsa.³³

On the day on which Sudoplatov informed him that he was to go to Copenhagen, Terletskii went to the Institute of Physical Problems, where Kapitsa gave him a letter for Bohr, and presents for Bohr and his family. In his letter to Bohr Kapitsa expressed a desire to meet Bohr to discuss the significance of the bomb:

At the moment I am much worried about the question of the international collaboration of science which is absolutely necessary for the healthy progress of culture in the world. The recent discoveries in the nuclear physics, the famous atomic bomb I think proves once more that science is no more the hobby of university professors but is one of the factors which may influence the world politics. Nowadays it is dangerous that scientific discoveries, if kept secret, will serve not broadly humanities but be used for selfish interests of particular people or national groups. Sometimes I wonder what must be the right attitude of scientists in these cases. I should very much like at the first opportunity to discuss these problems with you personally and I think it would be wise as soon as possible to bring them up to a discussion at some international gathering of scientists. Maybe it will be worth while to think over that [sic] measures should be included into the status of the "United Nations" which will guarantee a free and fruitful progress of science.

I should be glad to hear from you what is the general attitude on these questions of the leading scientists abroad. Any suggestions about means to discuss these questions from you I shall welcome mostly. I can indeed inform you what can be done in this line in Russia.³⁴

Kapitsa concluded by writing that his letter would be given to Bohr by Terletskii. "He is a young and able professor of the Moscow university," Kapitsa wrote, "and will explain you the aims of his visits abroad. With him you may send me the answer."

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Two days later, on October 24, Terletskii was taken to meet Beria, who asked him what questions he was going to put to Bohr. Terletskii, who had had no connection with the atomic project before he joined Sudoplatov's department in September, replied that he did not know. Beria summoned key physicists in the Soviet project — Igor' Kurchatov, Iulii Khariton (who was responsible for the design and development of the bomb), Isaak Kikoin (scientific director for the gaseous diffusion method of isotope separation), and Lev Artsimovich (scientific director for electromagnetic isotope separation) — to brief Terletskii and to compile a list of questions for him; Kapitsa did not take part in this meeting. According to Terletskii, Khariton suggested that Iakov Zel'dovich, the leading theoretician in the project, be sent to Copenhagen, since he would be able to worm secrets out of Bohr; but Beria rejected this idea, on the grounds that it was not clear who would worm more out of whom.³⁵

On October 25 Terletskii, who spoke little English, set out for Copenhagen with an interpreter named Arutiunov, who had worked for Anastas Mikoian, the People's Commissar of Trade, and with Lev Vasilevskii, an experienced intelligence operative who had already been involved in atomic espionage.³⁶ On October 31 they arrived in Copenhagen, where they stayed at the Soviet Embassy.

On November 2, Bohr received a visit from Mogens Fog, a Communist member of the Danish Parliament, who had been a leader of the anti-Nazi resistance, and was a professor of neurology at the University of Copenhagen. Fog told Bohr that a Soviet scientist had arrived "with a letter from Kapitsa and wished to deliver this to B[ohr] and have a confidential talk with him, which would have to be arranged so secretly that the secret service would not in any way receive information about it."³⁷ Bohr told Fog that he could not engage in secret arrangements of any kind and that such an approach was a regrettable mistake. If any Russian scientist wished to talk with him, this would have to take place in complete openness. Bohr stressed

that he had no secrets of military significance, but that he had obligations because of the confidence that had been shown him from the British and American side. He was glad to hear from [Mogens Fog], just as Kapitsa had also assured him, that one also had confidence in him from the Russian side. The only way in which B[ohr] could possibly make a small contribution to the great cause, was to work in full openness for mutual understanding of the great problems that the most recent development of science had raised.³⁸

Bohr told the British Legation in Copenhagen about the approach by Fog and about his reply. The British Legation passed on this information to the Foreign Office, which in turn forwarded it to the Embassy in Washington.³⁹ On November 7 Roger Makins, minister at the Embassy responsible for atomic energy policy, wrote to General Groves about the Soviet approach to Bohr. In his letter Makins stated that Bohr had not yet received the letter from Kapitsa, but that he was proposing to attend a large reception at the Soviet Legation on November 7.⁴⁰ Bohr did indeed go to the reception, but nobody approached him; Terletskii saw Bohr there, but felt that his English was too poor to enable him to hold a conversation with Bohr, and his interpreter was not at hand.

Terletskii finally made contact with Bohr on November 13, when he wrote asking if he could visit the Institute.⁴¹ Bohr replied on the same day, extending an invitation to Terletskii to come to the Institute on November 14.⁴² Vasilevskii, who was acting as driver and waited outside the Institute during the meeting, was sure that they were being followed by American intelligence agents. During the meeting Bohr's son Ernest, who had been a member of the Danish brigade formed in Sweden to assist in the liberation, sat on guard in an adjoining room armed with an automatic pistol.⁴³

Terletskii was accompanied by his interpreter; Bohr by his son Aage, also a physicist, who had travelled with Bohr to Britain and the United States during the war. First there were pleasantries, then Bohr read Kapitsa's letter. Bohr asked about Kapitsa's family and about Landau. Bohr spoke at length about Landau, saying what a good physicist he was. Landau had spent a year in prison in 1938-39, and Bohr had written at the time to Stalin that Landau was an outstanding physicist and incapable of doing anything that would justify arrest, and had asked Stalin to look into the case.⁴⁴ Bohr evidently hoped that he would help Landau now by showing an interest in his fate.

Bohr showed Terletskii the Institute. Finally, when it became clear that Aage Bohr would not leave, Terletskii began to ask his questions, from memory. "Bohr calmly answered them," Terletskii later wrote:

but the answers were very general: each time he referred to the fact that in Los Alamos he had not been informed of the details of the project, while he had not even been in the laboratories in the Eastern part of the U.S. [where the work on isotope separation had been done].⁴⁵

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Bohr soon ended the conversation, saying that he had to attend a meeting. He proposed that Terletskii come back to the Institute two days later.

Neither Terletskii nor his interpreter took notes.⁴⁶ According to Terletskii, they spent the whole of the next day reconstructing Bohr's answers. This was not a simple exercise, because the interpreter did not know any physics, and Terletskii could not always understand what the interpreter remembered. Bohr always strove for precision in what he said, but precision did not always make for ease of understanding. Besides, Terletskii recalled, "Bohr...spoke in a quiet voice, with a Danish accent that made it difficult to catch his English speech."⁴⁷

After his meeting with Terletskii, Bohr paid a "long visit" to the British Ambassador.⁴⁸ He reported that Terletskii had just delivered to him the letter from Kapitsa, which he showed to the Ambassador. "Professor Bohr asked me to note how naturally friendly the letter was," the Ambassador reported to London,

and how discreet in avoiding any suggestion that he should visit Professor Kapitsa. He thought that this reticence was deliberate and the whole letter reflected the official Soviet intentions, namely of trying to get Bohr's immediate reactions. He proposed to send, as the bearer of the letter had requested, a reply in general terms to the effect that he was glad to hear from his friend Kapitsa and thought there would be much value in an interchange of views between groups of scientists in different countries.... He thought it essential to retain Kapitsa's confidence because of the influence the latter could exert on Marshal Stalin.

In his conversation with the Ambassador, Bohr apparently made no reference to the questions Terletskii had put to him. He focused on what was, to his mind, most important – the possibility of an exchange of views with Soviet scientists. He was convinced, he told the Ambassador, that the "only safeguard against a catastrophe" lay in bringing "Russia out of her isolation."

On November 16 Terletskii and his interpreter returned to Bohr's Institute; once again they noticed that they were under surveillance. According to Terletskii,

Bohr answered all the remaining questions explaining once again that he did not know the details and he also stressed that qualified physicists such as Kapitsa and Landau were in a position to solve the problem if they already knew that the American bomb had exploded. And in connection with one of the questions Bohr delicately made it clear that it was not posed in a very qualified way.⁴⁹

Bohr gave Terletskii a copy of the Smyth Report, the official American report on the Manhattan project which had been published in August, and many offprints for Kapitsa and himself; he asked about Soviet science, and expressed his willingness to have Soviet physicists as visiting fellows at the Institute.⁵⁰

On the following day Bohr sent Terletskii a letter for Kapitsa. In this letter Bohr returned to the idea of having scientists meet to discuss the significance of the bomb:

As you will have seen from my letter of October 21st, which I hope you have received in the meantime, my own thoughts have, as yours, been very much occupied with the implications of the recent advance in nuclear physics. I agree most heartily that a discussion of these problems at some international gathering of scientists may be most helpful. For some time I have hoped that it should be possible to arrange such a meeting here in Copenhagen, and I have already mentioned it to several of our mutual English friends.

If you and some of your colleagues could come, I am sure that a number of the leading physicists from other countries would join us. Such a meeting which we are prepared to arrange at any time would not only give us all the opportunity to exchange views about those matters which are so much on the heart of everyone, but also to take up the question of collaboration in science and to discuss the many advances which have been made in various fields of physics in recent years.⁵¹

On November 20 Bohr wrote to Sir John Anderson, who was Chairman of a special Advisory Committee on atomic energy — a “quasi-minister,” in Margaret Gowing’s words — about Terletskii’s visit.⁵² He did not refer to the questions that Terletskii had asked, but discussed Kapitsa’s letter and his reply.⁵³ He had responded to Kapitsa, he wrote, that “we shall be glad at any time to arrange an international scientific meeting here in Copenhagen and that, if perhaps he and some of his colleagues could attend, I have the hope that some of the leading scientists from other countries would join us.” Bohr also mentioned his invitation to Kapitsa to visit Copenhagen whenever he could. In this connection he wrote to Anderson that “you will understand that I hope by this course to avoid the question of an invitation to me to come to Moscow, as touched upon by Professor Terletzky.” None of the other sources mention an invitation to Bohr to visit Moscow. If Terletskii did indeed broach this — as Bohr’s letter to Anderson clearly implies — Bohr might have felt compelled not to accept an invitation in view of British fears that he might be kidnapped.

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Terletskii and his interpreter spent November 17 reconstructing Bohr's answers, and left for Moscow on the evening of the same day, arriving on November 20. On November 21 they made a report to Beria. Terletskii has little to say about this meeting:

Arutiunov and I reported everything, as we had agreed in composing the report. Beria behaved rather freely, interrupting us with remarks swearing at Bohr and at the Americans...Toward the end he spoke positively of Bohr, saying that "the Americans used the old man and then dismissed him, but we must support him."⁵⁴

Beria's Memorandum to Stalin

In the summer of 1994 the State Archive of the Russian Federation released a memorandum that Beria had sent to Stalin on November 28, 1945 about Terletskii's trip to Copenhagen.⁵⁵ "Niels Bohr is known as a scientist with progressive views and as a convinced supporter of the international exchange of scientific achievements," Beria wrote in his cover letter. "Hence we sent a group to Denmark, under the pretense of looking for equipment taken by the Germans from Soviet scientific establishments, to establish contact with Niels Bohr and obtain from him information about the atomic bomb problem." Apart from the two-page cover letter, the memorandum contains the questions put to Bohr and the answers he supposedly gave (13 pages), as well as a brief evaluation by Kurchatov (1 page).

It is important to bear in mind the circumstances in which this document was composed. The answers to the questions were not written by Bohr, but were composed by Terletskii and the interpreter on the days following the meetings with Bohr. It may be wondered how accurately the document reflects what Bohr said in view Bohr's indistinct speech, Terletskii's lack of English, and the interpreter's ignorance of physics. After the document was made public Aage Bohr, who had been present at the meetings with Terletskii, issued a statement which said in part:

the lengthy conversation on technical matters, reported in the document, is quite at variance with my own recollections... The answers attributed to my father are not recognizable as his wording. There are also many utterances that he would never make, such as references to unconfirmed rumours, unofficial conversations with colleagues, the statement that all scientists who have participated in the project, including the U.S. and British, without exception, are greatly offended that a great discovery has become the property of politicians, etc....⁵⁶

There are two ways in which the document could have been put together. First, Terletskii and his interpreter may have composed as accurate an account as possible of Bohr's answers; such an account could well contain serious errors in view of the circumstances under which it was written. Second, Terletskii and his interpreter may have used the Smyth Report to expand on what Bohr had said. Terletskii refers in his memoir to Beria's harsh treatment of those who did not carry out his orders.⁵⁷ He and Arutiunov had every incentive to portray the mission as successful, and they may therefore have padded the document.

According to Beria's memorandum, 22 questions were put to Bohr. Six dealt with isotope separation, 8 with nuclear reactors, 8 with nuclear fission and the bomb. Some of the questions were very general. Question 1 asked: "By what method was uranium-235 obtained in practice in large quantities and which method is now considered the most promising — diffusion, magnetic, or some other?" Some questions were more specific, for example Question 7: "What material is used as an absorber [in reactors]?" Most of the questions about isotope separation and nuclear reactors asked about things that are discussed extensively in the Smyth Report. In each case Bohr's answer was less detailed and to the point than the Smyth Report, with which Kurchatov and his colleagues were already familiar; a Russian translation had been set in type by the middle of November.⁵⁸

In his answers to the other questions Bohr was not always forthcoming. For example, when he was asked (Question 19) "What materials were the atomic bombs made of?" Bohr replied that

I do not know exactly what material the bombs dropped over Japan were made of. I don't think that any theorist will answer that question for you. Only the military could answer that question. As a scientist I can say that these bombs evidently were made from plutonium or uranium-235.

While some of the scientists at Los Alamos did know the answer to this question, it is not clear whether Bohr did.⁵⁹

It is clear, however, that in some of his answers Bohr passed up the opportunity to convey crucial information to Terletskii. When Terletskii asked about the spontaneous fission rate for the isotopes of uranium and plutonium, Bohr replied that

Few spontaneous fissions take place, and they should not be taken into account in calculations. The period of spontaneous fissions is equal to about 7000 years. I cannot give the exact figures, but you understand

yourself that with this value for the period of spontaneous fission, one should not expect it to have a substantial influence on the process.

It is not clear from the sequence of the questions whether Terletskii was asking about the bomb or about reactors. Bohr's answer is significant because in this case Bohr did not take the opportunity to tell Terletskii about the high spontaneous fission rate of plutonium-240, which had been discovered at Los Alamos in the summer of 1944. The spontaneous fission rate of plutonium-240 made it necessary to devise a new and very difficult design concept, implosion, for the plutonium bomb. Designing the implosion mechanism was the hardest task Los Alamos had to solve. If Bohr had been seeking to help the Soviet Union, he would certainly have given this crucial information — of which he himself was aware — to Terletskii.⁶⁰

When he was asked (Question 20) about possible defense against the atomic bomb, Bohr gave a long answer saying there was no defense. His answer expressed the same view he had put forward on many occasions, in public and in private:

We must think of the establishment of international control over all countries as the only method of struggling with the atomic bomb. All must understand that with the discovery of atomic energy the fates of all nations are extremely closely intertwined. Only international collaboration, the exchange of scientific discoveries, the internationalization of scientific achievements, can lead to the elimination of wars, which means the elimination of the very necessity to use the atomic bomb. That is the only correct method of defense.

This view is reflected in Bohr's answer to the next question:

Q.21 "Is the report about work on the creation of a super-bomb true?"

A. I think that the destructive power of the bomb already invented is already big enough to wipe whole nations off the face of the earth. But I would welcome the discovery of a super-bomb, because then humanity would understand more quickly the need to work together. But essentially I think that these reports have no real basis. What does a super-bomb mean? It is either a bomb heavier than that which has already been invented, or it is a bomb made out of some new material. Well the former is possible but pointless since, I repeat, the destructive power of the bomb is already very great, and the latter I believe to be unrealistic."

This question gave Bohr the chance to say something about American work on the hydrogen bomb (which is what the term superbomb refers

to), but he failed to take the opportunity. Bohr had learned during the war of the preliminary work at Los Alamos on the superbomb.⁶¹

In his evaluation of Bohr's answers Kurchatov noted that Bohr had been asked two types of questions: those relating to the general direction of research, and those concerning specific physical data and constants. Bohr, he wrote, had given definite answers to the first group of questions — thus implying that Bohr had not answered the second group in a similarly definite way. Bohr had given a "categorical answer" to the question about the methods of isotope separation used in the United States, wrote Kurchatov, and this had completely satisfied Kikoin, who had formulated the question. Kurchatov noted also that Bohr had made an "important remark concerning the effectiveness of using uranium in the atomic bomb." This, he wrote, should be subjected to theoretical analysis by professors Landau, Migdal, and Pomeranchuk. This comment appears to refer to Question 22, which is unclear but seems to ask whether the ultra-high densities caused in the fissile material by the chemical explosion would enhance the nuclear chain reaction. Bohr's reply, as reported by Terletskii, has been described by Hans Bethe, Kurt Gottfried, and Roald Sagdeev as "incomprehensible."⁶²

Kurchatov does not offer a general assessment of the value of Bohr's answers; he does not say that the information is useful, or that Soviet physicists had learned much. He was not always so reticent; he often waxed enthusiastic in his comments on intelligence information.⁶³ But in this case he had not obtained very much, since the general direction of research was already described in the Smyth Report in much greater detail than in Bohr's answers, and Bohr did not answer the specific questions about physical data. It is possible, as Terletskii has claimed, that Kurchatov felt more confident in the reliability of the Smyth Report after Bohr's answers. But it is also possible that Kurchatov, even though he had obtained little or nothing from Terletskii's mission, understood that to state in his evaluation that the mission had yielded nothing would have been to invite trouble. The easiest thing was to write a non-committal assessment.

Terletskii's account of his visit to Bohr and Beria's memorandum to Stalin show that Sudoplatov's account of the mission is misleading in crucial respects. Bohr did not make "valuable suggestions that enabled us to overcome our failures" in the building of the first Soviet reactor. (Assembly of the first Soviet reactor had not begun in November 1945; it started only in August of the following year.)⁶⁴ More importantly, these documents do not support the charge that Bohr shared nuclear secrets with the Soviet Union. On the contrary, they show that in his answers to Terletskii he was careful not to go beyond what had already

been made public, and that he passed up the opportunity to provide the Soviet Union with valuable information. As Terletskii writes in his memoir, "the fact that Bohr in fact told us nothing really new became clear to me after reading the Smyth Report and studying the photocopies in the safes of Department S."⁶⁵

Conclusion

Sudoplatov's memoirs are wrong or misleading on Niels Bohr's activities. This does not mean that the memoirs are completely useless as a source on other issues. Memoirs and oral history can bring interesting information to light. But they are sources that need to be treated with care, and should not be used as the basis for startling claims, as happened in this case.

This is not to say that other sources are unproblematic. Documents like Beria's memorandum to Stalin need to be interpreted in context. The controversy surrounding the Sudoplatov memoirs and the charge of espionage should be treated as a cautionary tale about the need for care in handling the new information coming out of the former Soviet Union.

The existing sources acquit Bohr of the charge of "sharing nuclear secrets" with the Soviet Union, but the whole episode of Terletskii's visit to Bohr leaves many questions unanswered. How did the idea of sending someone to Bohr arise? Did Kapitsa suggest that contact be made with Bohr? And if so, for what purpose? Did Kapitsa know that specific scientific and technical questions were going to be put to Bohr, or was it his hope that a meeting of physicists might be arranged at which the implications of the bomb would be discussed? Why was Kapitsa not involved in preparing the questions for Bohr?

Kapitsa was a member of the Special Committee on the Atomic Bomb, but his relations with Beria were poor. He wrote to Stalin on October 3, 1945 asking to resign from the Committee because Beria did not respect scientists; he wrote again on November 25 — four days after Terletskii reported to Beria on his trip — and this time offered a more detailed critique of Beria's management of the project.⁶⁶ It is possible that Kapitsa may have felt that Beria had abused his, Kapitsa's, relationship with Bohr. It is also possible that Kapitsa had bragged in the Committee of his ties with Western scientists, and that Beria felt, after Terletskii's visit to Bohr, that Kapitsa's contacts had not proved very useful. This aspect of the story remains opaque.

What was Beria's motive in sending Terletskii to see Bohr? Terletskii said many years later that Beria's goal was "to put pressure in some way on our scientists, with whom they were angry for somehow slowing things down....They used these [intelligence] materials badly

and hadn't made the bomb in time."⁶⁷ This is plausible, since Stalin, Beria, and Molotov were hardly likely to accept responsibility for the slow progress of the atomic project before August 1945. Perhaps Beria did believe that Bohr would provide useful information about the atomic bomb. Perhaps he hoped to use Terletskii's mission to see whether Western scientists more generally would help the Soviet Union to build its bomb.

Bohr's motives in agreeing to see Terletskii are clearer. Since 1943 he had feared that a nuclear arms race would take place between the Soviet Union and the Western Allies. He had also hoped that governments might learn to cooperate in order to deal with the danger posed by nuclear weapons. He believed that the international contacts that had been formed among physicists before the war might play a useful role in creating a common understanding of the nuclear danger and of the measures that should be taken to counter it. It was very important for him to reestablish contact with Soviet physicists, and especially with Kapitsa, whom he knew well.

This explains why Bohr was willing to talk to Terletskii, but it does not explain why he answered the questions that Terletskii put to him — assuming that Beria's memorandum is not a complete fabrication. He could have told Terletskii politely that he could not speak about such things. One possibility for his willingness to do so is that he had agreed with the British to let Terletskii ask his questions, in order to learn what it was the Soviet scientists wanted to know. This is speculation, however, and there is no evidence in the British files to support it, though Bohr was in close touch with the British about Terletskii's visit.

A more likely explanation is that Bohr wanted to maintain the confidence that he believed the Soviet Union had in him, and was quite clear in his own mind how far he could go in his answers to Terletskii without disclosing nuclear secrets.⁶⁸ To have told Terletskii that he could not answer his questions might have seemed like a refusal to discuss the bomb with Soviet scientists. At the same time he did not want to lose the confidence of the British and the Americans, and so he kept them informed of the visit. Bohr was thus steering a careful course in his effort to arrange a meeting of scientists from the West and the Soviet Union to discuss the bomb. As he had explained to Mogens Fog, the only way in which he "could possibly make a small contribution to the great cause, was to work in full openness for mutual understanding of the great problems that the most recent development of science had raised."⁶⁹ Viewed in this context, Terletskii's questions and Bohr's uninformative answers were of minor significance, much less important than the great task that Bohr had set himself.

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Notes

I owe a considerable debt to Finn Aaserud, Lorna Arnold, Aage Bohr, and Kurt Gottfried, for advice and help with sources. I am grateful to Aage Bohr and Finn Aaserud for permission to quote from documents in the Niels Bohr Archive, Copenhagen.

¹ Pavel Sudoplatov and Anatoli Sudoplatov with Jerrold L. and Leona P. Schecter, *Special Tasks: The Memoirs of an Unwanted Witness — A Soviet Spymaster* (Boston: Little, Brown, 1994).

² *Ibid.*, p. 172.

³ The McNeil-Lehrer Newshour, April 18, 1994; *Time*, April 25, 1994, pp. 65-72.

⁴ See, for example, Edward Teller, "Scientists, Not Spies," *Wall Street Journal*, May 11, 1994; Hans A. Bethe, "Atomic Slurs," *Washington Post*, May 27, 1994; Thomas Powers, "Were the Atomic Scientists Spies?" *New York Review of Books*, June 9, 1994, pp. 10-17.

⁵ Sudoplatov, *Special Tasks*, p. xix.

⁶ *Ibid.*, pp. 205-207.

⁷ *Ibid.*, p. 172.

⁸ *Ibid.*, p. 181.

⁹ *Ibid.*

¹⁰ *Ibid.*, p. 196.

¹¹ *Ibid.*, p. 207.

¹² See, for example, Abraham Pais, *Niels Bohr's Times, In Physics, Philosophy, and Polity* (Oxford: Clarendon Press, 1991).

¹³ V.Ia. Frenkel', "Nil's Bor i sovetskie fiziki," in *Nil's Bor i nauka XX vekom* (Kiev: Naukova Dumka, 1988), pp. 16-27.

¹⁴ Pais, *Niels Bohr's Times*, pp. 473-497; Margaret Gowing, *Britain and Atomic Energy 1939-1945* (London: Macmillan, 1964), pp. 245-250.

¹⁵ Pais, *Niels Bohr's Times*, pp. 497-504; Gowing, *Britain and Atomic Energy* pp. 346-348.

¹⁶ Kapitsa to Bohr, October 28, 1943. United States National Archives, RGFF, MED TS folder 11; on the context see Gowing, *Britain and Atomic Energy* p. 350.

¹⁷ Gowing, *Britain and Atomic Energy*, p. 350.

¹⁸ P.L. Kapitsa, *Pis'ma o nauke* (Moscow: Moskovskii rabochii, 1989), pp. 206-207.

¹⁹ On Bohr's suspicions see Gowing, *Britain and Atomic Energy*.

²⁰ *Ibid.*, pp. 350-355.

²¹ *Ibid.*, pp. 357-358.

²² *Ibid.*, p. 447.

²³ Churchill to Cherwell, September 20, 1944, Public Record Office, London (hereafter PRO) CAB 126/39.

²⁴ Cherwell to Churchill, September 23, 1944, PRO, CAB 126/39.

²⁵ Gowing, *Britain and Atomic Energy*, p. 359.

²⁶ "Energy from the Atom," *The Times*, August 11, 1945, p. 5.

²⁷ "A Challenge to Civilization," *Science*, October 12, 1945, pp. 363-364.

²⁸ Copenhagen to Foreign Office, September 14, 1945, PRO, CAB 126/40.

²⁹ Bohr to Kapitsa, October 21, 1945, Niels Bohr Scientific Correspondence, Niels Bohr Library, American Institute of Physics, College Park, Maryland.

³⁰ Sudoplatov, *Special Tasks*, p. 181.

³¹ On this see David Holloway, *Stalin and the Bomb* (New Haven and London: Yale University Press, 1994), pp. 134-135.

³² Sudoplatov states that Department S was set up in 1944 (*Special Tasks*, p. 184). But an article based on information from the Russian Foreign Intelligence Service points out that Sudoplatov was appointed to head Department S only in September 1945. See Sergei Leskov, "Robert Oppenheimer mog byt' sovetским agentom tol'ko esli sushchestvovala nikomu neizvestnaia shpionskaia set'," *Izvestiia*, April 30, 1994.

³³ Terletskii's account is published as Ia.P. Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," in *Voprosy istorii estestvoznaniia i tekhniki*, 1994, No. 2, pp. 21-41. This memoir was prepared in 1973 on the basis of brief diary entries and Terletskii's recollections. Terletskii gives the impression of trying to provide an accurate record, and his account is supported at some points by the correspondence between himself and Bohr and between Bohr and Kapitsa. Unless otherwise stated, the account of Terletskii's visit to Bohr is based on Terletskii's memoir. I had read this memoir before completing my *Stalin and the Bomb*, but I was not allowed to cite it or quote from it.

³⁴ Kapitsa to Bohr, October 22, 1945. Niels Bohr Archive, Copenhagen.

³⁵ Khariton, the only one of these scientists still alive, does not remember anything of this whole affair.

³⁶ On Vasilevskii see Sudoplatov, *Special Tasks*, passim.

³⁷ This quotation is taken from an English translation of a memorandum dictated at the time, by Niels Bohr to his son Ernest. The document is in the Niels Bohr Archive, Copenhagen. The translation is by Finn Aaserud.

³⁸ *Ibid.*

³⁹ Copenhagen to Foreign Office, November 5, 1945; Ricketts to Makins, November 6, 1945, PRO CAB 126/40.

⁴⁰ Makins to Groves, November 7, 1945. United States National Archives, MED files, M 1109, File 11, Item F. Quoted in Powers, "Were the Atomic Scientists Spies?", p. 14.

⁴¹ Terletskii to Bohr, November 13, 1945. Niels Bohr Archive, Copenhagen.

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- ⁴² Bohr to Terletskii, November 13, 1945. Niels Bohr Archive, Copenhagen.
- ⁴³ Information from Finn Aaserud.
- ⁴⁴ Bohr to Stalin, Autumn 1938, in I.M. Khalatnikov, ed., *Vospominaniia o L.D. Landau* (Moscow: Nauka, 1988), pp. 344-345.
- ⁴⁵ Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," p. 38.
- ⁴⁶ Terletskii interview in *Red Bomb, Episode 2*, The Discovery Channel, September 2, 1994.
- ⁴⁷ Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," p. 36. This last point is especially important, since Terletskii has Bohr saying things that are quite at variance with the views he expressed on other occasions. For example, according to Terletskii Bohr said "that in his opinion all countries should possess the atomic bomb, and in the first place Russia. Only the spread of this powerful weapon in various countries could guarantee its nonuse in the future. Fortunately, continued Bohr, the secret of the atomic bomb no longer exists, since all qualified physicists understand the essence of the processes in the atomic bomb, and the fact that the Americans had succeeded in creating and using it would greatly lessen the search for those concerned with this problem." ("Operatsiia 'Dopros Nil'sa Bora'," p. 37) Bohr seems never to have expressed this view to anyone else, and it appears therefore to be a garbled account of Bohr's views, a misunderstanding of his position. Jeremy Stone has — mistakenly in my view — presented this as Bohr's view, in *F.A.S. Public Interest Report*, July/August, 1994, pp. 2, 14.
- ⁴⁸ Copenhagen to Sir A. Cadogan (Permanent Under-secretary at the Foreign Office), November 14, 1945, PRO, CAB 126/40.
- ⁴⁹ Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," p. 38.
- ⁵⁰ Henry DeWolf Smyth, *Atomic Energy for Military Purposes* (Stanford: Stanford University Press, 1989). This was originally released in August 1945 by the U.S. Government.
- ⁵¹ Bohr to Kapitsa, November 17, 1945. Niels Bohr Archive, Copenhagen.
- ⁵² On Anderson's unusual position under the Labour Government see Margaret Gowing, assisted by Lorna Arnold, *Independence and Deterrence: Britain and Atomic Energy 1945-1952*, Volume 1, Policy Making (London: Macmillan, 1974), pp. 24-31.
- ⁵³ Bohr to Anderson, November 20, 1945. PRO CAB 126/40.
- ⁵⁴ Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," p. 40.
- ⁵⁵ This has been published in English in the *Cold War International History Project Bulletin*, Issue 4, Fall 1994, pp. 50-51, 57-59. See also the commentary by Yuri N. Smirnov, "The KGB Mission to Niels Bohr: Its Real 'Success'," *Ibid.*, pp. 51, 54-57.
- ⁵⁶ Statement issued by Aage Bohr, June 1994.
- ⁵⁷ Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," p. 38.
- ⁵⁸ Holloway, *Stalin and the Bomb*, p. 173.

⁵⁹ For an authoritative commentary on this document see Hans A. Bethe, Kurt Gottfried, and Roald Z. Sagdeev, "Did Bohr Share Nuclear Secrets?" *Scientific American*, May, 1995. One of the questions put to Bohr concerned xenon poisoning, which can greatly distort the operation of a reactor and almost shut it down. A sentence to this effect (though not mentioning xenon) appeared in the first, cyclostyled, copies of the Smyth Report made available in August 1945, but was removed from later editions. Bohr gave an uninformative, and even misleading, answer. See Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon and Schuster, 1995), pp. 215-222.

⁶⁰ Bohr had been briefed by Richard Feynman about chain reactions in bombs, and had participated in the implosion design. See Bethe et. al., "Did Bohr Share Nuclear Secrets?" See also Lillian Hoddeson et. al., *Critical Assembly: A Technical History of Los Alamos during the Oppenheimer Years 1943-1945* (Cambridge: Cambridge University Press, 1993), p. 248. Kurchatov had already learned of the spontaneous fission problem with plutonium-240 and of the implosion design in the spring of 1945 from Fuchs and another source at Los Alamos. See Holloway, *Stalin and the Bomb*, pp. 106-108.

⁶¹ Letter from Edward Teller to the author, July 20, 1994.

⁶² The question itself is somewhat garbled; the formulation given here is taken from Bethe et. al., "Did Bohr Share Nuclear Secrets?" as is the description of Bohr's answer.

⁶³ See, for example, Holloway, *Stalin and the Bomb*, pp. 91, 94-95, 108.

⁶⁴ Holloway, *Stalin and the Bomb*, p. 181.

⁶⁵ Terletskii, "Operatsiia 'Dopros Nil'sa Bora'," p. 41.

⁶⁶ Holloway, *Stalin and the Bomb*, pp. 138-144.

⁶⁷ *Ibid.*, p. 142.

⁶⁸ See note 38 above, and the memorandum on Bohr's conversation with Mogens Fog at the beginning of November 1945.

⁶⁹ *Ibid.*

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