AMERICANA

E-Journal of American Studies in Hungary

Volume X, Number 2, Fall 2014

"Soviet Nuclear Espionage in the USA During World War II. The Case of Oppenheimer and Bohr" by Zoltán Cora

Zoltan Cora is a Senior Assistant Professor at the Institute of English and American Studies, Faculty of Arts, University of Szeged, Hungary. His main areas of research are 19th–20th-century European history, international relations, British and Hungarian political and social history, especially in the interwar period (1918-1939), as well as classical and modern aesthetics with a focus on the *sublime*. His publications include book chapters on these topics and articles published in *Comparativ. Zeitschrift für Globalgeschichte und vergleichende Gesellschaftsforschung*, *Aetas*, *Múltunk*, and other journals. Among several research projects, he participates in the *Comparative History Project* organised by the Central European University, Pasts Inc. In 2011 he defended his PhD dissertation entitled "A szociálpolitika választútjai Magyarországon: A mintakövetés lehetőségei és kényszerei (1938-1950)" [Hungarian social policy at crossroads: possibilities and necessities of pattern finding (1938-1950)]. He is currently working on the publication of his PhD dissertation as a monograph. Email: coraz@lit.u-szeged.hu

World War II brought about the end of Europe's political and socio-economic hegemony on the globe. 1945 witnessed a desolated Europe marred by a long war with two emerging superpowers (re)polarising the globe: the United States of America and the Soviet Union. The "Age of Europe" passed away. However, it had been forecast and envisioned by a 19th-century premonition. It was Alexis de Tocqueville, the French aristocrat, who was well-travelled both in Europe and America and who summarised his experiences and views on democracy and the *ancien régime* in his work, *Democracy in America*. In 1835 Tocqueville admonished his educated European readers claiming that

[t] oday there are two great peoples on earth who, starting from different points, seem to advance toward the same goal: these are the Russians and the Anglo-Americans. Both grew up in obscurity; and while the attention of men was occupied elsewhere, they suddenly took their place in the first rank of nations, and the world learned of their birth and their greatness nearly at the same time. All other peoples seem to have almost reached the limits drawn by nature, and have nothing more to do except maintain themselves; but these two are growing.5 All the others have stopped or move ahead only with a thousand efforts; these two alone walk

with an easy and rapid stride along a path whose limit cannot yet be seen. The American struggles against obstacles that nature opposes to him; the Russian is grappling with men. The one combats the wilderness and barbarism; the other, civilization clothed in all its arms. Consequently the conquests of the American are made with the farmer's plow, those of the Russian with the soldier's sword. To reach his goal the first relies on personal interest, and, without directing them, allows the strength and reason of individuals to operate. The second in a way concentrates all the power of society in one man. The one has as principal means of action liberty; the other, servitude. Their point of departure is different, their paths are varied; nonetheless, each one of them seems called by a secret design of Providence to hold in its hands one day the destinies of half the world. (2010, 655-656)

More than one hundred years later a similar evaluation was brought forth by a quite different man of a quite different age. Before his final demise, Adolf Hitler also envisioned (with himself as "the last hope of Europe") the rise of two new superpowers that would transform the world and would divide Europe to seek out Germany's support (Genoud 1961, 107).

These premonitions proved to be prophecies as both Tocqueville and Hitler foresaw something that later developed into a new antagonism, the Cold War. But this antagonism had also opened a dimension, which Tocqueville not in the least, and Hitler only little could foresee: nuclear energy. Studies researching what role the atomic bomb and arms race played in generating the Cold War and what techniques, strategies and methods military intelligence agencies employed in order to outstrip the other have always been numerous and even mushroomed recently. No exception to the trend, this study examines the "incubator phase" of the Cold War, the role of the atomic bomb in this historical process, and how Soviet espionage – competing with the Americans – obtained the secret which made the bomb the verging point of the events to come, especially focusing on spying on Julius Robert Oppenheimer and Niels Bohr, two key figures in the Manhattan Project.

To prove the importance of this historical phenomenon I will, in the following, cite and investigate several contemporary documents of the Soviet secret service, namely NKVD (the People's Commissariat for Internal Affairs, that is, *Narodnyy Komissariat Vnutrennikh Del*), part of the Soviet secret police involved in espionage and political assassinations operations abroad. My hypothesis is that the NKVD worked with great precision to gain information about essential aspects of American nuclear research, including the ratios and methods of the enrichment of uranium. Soviet nuclear spying was characterised by neatly elaborated obtaining of information, analysis and evaluation. This included Igor Kurchatov's think tank's activity, which was carefully combined with direct spying activities. I argue that the interrogation of Niels Bohr was prepared by Kurchatov himself at the Leningrad Institute of Physics and Technology, with a view to taking advantage of the 'idealism' of scientists participating in the Manhattan Project.

Research into the atomic bomb began in the early 1940s, but as a strategic weapon it was used after the end of the war in Europe. Proper research was undertaken almost simultaneously in the Soviet Union, in the USA, and in Germany as well, but with the defeat of the Third Reich, only the USA and the Soviet Union remained as potential candidates for nurturing the atomic project(s). Among these, the Manhattan Project proved its unquestioned importance in creating the first atomic bomb in the history of humankind. President Truman's consequent decision of its application against the Empire of the Tenno was a substantial turn in the so-called "antagonistic cooperation," compelling the Soviet Union to enhance its

ongoing atomic research and strengthen its military intelligence activities regarding the atomic secret.

The Soviet leaders perceived the real potential of the bomb; both Vyacheslav Molotov and Josip Stalin attributed relatively little importance to atomic bombs in waging a full-scale war. Nevertheless, the Soviets struggled for information proper through numerous ways of espionage. Directed by Lavrenty Beria as Secretary of USSR NKVD and Igor Kurchatov as scientific referent, a properly planned action in November 1945 managed to acquire the missing information for the creation of the bomb through a successful interrogation of the famous Danish physicist, Niels Bohr, who was part of the crew working on the American Manhattan Project. The mission's success was shown by a short but remarkable evaluation of Kurchatov (See Document 4). But before discussing Soviet espionage activity in the USA during the war, it is worth conceptualising first how espionage fitted in the correlative system of the nuclear question and into the first phase of the Cold War, known also as the period of "antagonistic cooperation".

After defeating Nazi Germany, the disagreement among the allies, which had been hardly or latently perceived until then, surfaced thus transforming their cooperation into an antagonistic one. The increasingly diverging interests and policies of the two superpowers, the USA and the Soviet Union, led to the formation and stabilization of buffer zones in the post-war years, effectively contributing to the division of Europe into a Western and an Eastern half.[1] Besides the fundamental social, economic and political differences, this antagonism was also rooted in a powerful ideological determination and motivation. On the basis of and in the awareness of its traditional historical legacies, US governments regarded themselves as expansionists of liberal democracy, favouring their political system, while Soviet leaders envisioned a socialist world revolution through the Leninist way to communism. Therefore, the possible application of the atomic bomb and the espionage targeting nuclear secrets was not only influenced by traditional military-political factors, but by ideological and moral motivations as well. However, it is also worth noting that in relation to the experimental nuclear tests, the Soviet government's political and military steps were relatively belated. Though they recognised the problem quite early, when the technological conditions of building a bomb were also given, Soviet leaders delayed the development of nuclear weapons. This makes sense only through the system-specific belated political chain of reactions that originated from the Russian historical tradition.

Besides these factors, economic performance also impacted on the quality and quantity of the production of conventional and nuclear arsenals. With regard to this aspect, the two antagonists showed different characteristics: as a result of the war, the USA inevitably emerged as the leading economic power on the globe with almost inexhaustible resources for research and development (Kennedy 1988, 357-367). Americans could drastically increase their strategic potential by relying on their naval and air supremacy (*thalassocractic rule*) which was of primary importance regarding the deployment of the bomb. Ballistic missile technology (and related technologies of effective bomb deployment) did not exist in the 1940s, which meant that the only way to deploy an atomic bomb was the same as in Hiroshima and Nagasaki: dropping it from an air carrier. In addition to this, in order to reinforce their landed influence, successive US governments tried to transform their initially informal influence on those countries which belonged to the American 'interest zone' into more formal and contrived forms (Kennedy 357-358). On the contrary, the infrastructure and the economy of the Soviet Union incurred considerable losses during the war. They had to return to the planned economic management dismissed in 1928 because of international

financial and material support was given to the country, especially from the US. This economic turn favoured the development of heavy industry at the expense of agricultural and light industrial production, thus causing irretrievable structural damages to Soviet economy. Notwithstanding this circumstance, the Soviet government allocated the necessary financial and material resources to nuclear research within the new strategic weapons development program already during World War II (Kennedy 359-360).

However, the research into nuclear energy and its battlefield use did not set in with the early Cold War diplomacy, including the bipolarisation of the world, but originated from the early 1940s. Though the professionalization of the US army did not reach the level of those of the European armies, especially the German, French and British, still President Franklin Delano Roosevelt decided to finance the development of the atomic bomb, not to a small extent because of the danger he saw in Nazi expansionism. It was a presidential premonition that was also reinforced by news of German bomb developments. The realisation of the Manhattan Project was enhanced by several factors in the USA. American elite research universities reached or occasionally outdid their European counterparts. Moreover, these universities disposed over almost inexhaustible financial resources, thus offering a safe haven for scientific research and laboratory work. In addition to this, relative strategic safety was also granted by the distance of these facilities from any war zones of the globe. Last but not least, numerous European scientists, who fled to the US before Nazi invasion, enriched the impressive American think tank (Gaddis 88-92, 96-99).

All these factors contributed to the relatively rapid development of theoretical and applied research. With the cooperation of Julius Robert Oppenheimer, who led the research in the Los Alamos Laboratory, and Enrico Fermi, the first nuclear reactor was completed in 1942, and the first atomic bomb was finished three years later, in July, 1945. Actually, the first chain reaction was created on December 2, 1942, while the first experimental nuclear bomb test was carried out in Alamogordo, near Los Alamos in New Mexico. (According to a contemporary anecdote, the monitor stand was placed too close to the location of the actual explosion, and the shock wave tumbled down the stand, throwing the amazed and awed spectators to the ground without harm.) After the successful test, two committees were established to decide whether the new weapon could be deployed against Japan or not. The new weapon was unique in 20th-century military history, because its immense destructive efficiency gave an immeasurable strategic advantage to its owner. This ambience found the Soviets and the Western European countries at crossroads. Western European countries either caught up or fell behind. The British and the French government considered the atomic bomb a relatively cheap means to maintain their status as great powers, which seemed an unreal assessment even in the eyes of the contemporaries regarding the extremely high level of financial and intellectual capital needed to produce the bomb (Gaddis 103). Consequently, to use a military metaphor, the Truman Administration ‘gained the high ground’ in nuclear development.

Nevertheless, the problem of using it against Japan was still open. Of the above mentioned two commissions, the military commission, led by the Secretary of War, Henry Stimson, and the Secretary of State, James F. Byrnes, voted for deploying the bomb, while the social committee, including numerous scientists, arrived at the opposite evaluation. According to Albert Einstein, who participated in the work of the commission, the demonstration effect of an atomic bomb exploded in an uninhabited island would be sufficient to enforce the Japanese capitulation (Kennedy 365, 370). Finally, Truman accepted the military standpoint and the Enola Gay dropped the bomb on Hiroshima and Nagasaki (August 6 and 9, 1945).

However, I think John Lewis Gaddis convincingly argues that the United States would have had other means to force the Tenno to his knees, relying on an unlimited submarine warfare against Japan coupled with the massive bombardment of the main island with B-29 strategic bombers (Gaddis 103). Nonetheless, Truman also wanted to show Stalin that the new weapon was no longer an unattainable strategic advantage, while, in fact, the production of a nuclear arsenal became one of the fundamental characteristics of Soviet-American rivalry (Kennedy 357-372).

However, the Americans could not entirely maintain this strategic advantage, because, on the one hand, the Soviet nuclear research had already been under way, and Soviet military intelligence had been very busy filling out the "white spots" in Soviet scientific research by spying on scientific secrets of other countries on the other. According to Winston Churchill, Truman informed Stalin about the existence of the bomb before Hiroshima during the Potsdam Conference (July 17 – August 2, 1945), and Stalin was not aware of the bomb (Churchill 646-654). However, Georgy K. Zhukov, the Supreme Military Commander of the Red Army and of the Soviet Occupation Zone in Germany (Sowjetische Militäradministration in Deutschland, SMAD), who also participated in the conference talks, remembered differently: he claimed that Stalin did not even shake a bit when hearing the news, but on returning to Moscow, he immediately ordered to take further steps to accelerate nuclear research (Zsukov 56-57).

Moreover, Stalin's order did not mean the first step in Soviet nuclear research, as the Leningrad Institute of Physics and Technology had been conducting nuclear research for years, which was further enhanced under political pressure. The Soviet economic think tank also decided to include nuclear development in the directing body of the Political Committee by establishing three offices. Lavrenty Beria was elected as the leader of the nuclear program on August 7, 1945; he was at the same time the General Commissar of the State Security of the USSR. In this context, the other, "old-line" comrade, Molotov was not seen apt and dynamic enough to lead the nuclear program, and thus, Beria, who had far better skills in organising and was highly experienced in intelligence, seemed to be the better choice (Holloway 88-89). Georgy M. Malenkov and Andrei Sakharov were elected as the leaders of the other two offices. The former led the development of jet planes, while the latter was working on research into radar technology, and was later promoted as the leading scientist of the Soviet thermonuclear program.

I think the fact that the political coordination of espionage and nuclear research was so neatly intertwined was not by coincidence; its significance was made obvious since the issue was handled by Stalin himself. Moreover, as David Holloway points out, Igor V. Kurchatov, the scientific director of Soviet nuclear research, gained full financial and material support from Stalin (90). Although Soviet nuclear research quickly caught up with the American one, as it has been pointed out above, the realisation of the Soviet atomic bomb was hindered by the political and historical factors that were specifically characteristic of the Soviet political system and which slowed down progress in the field. Kurchatov himself admitted that within this international political ambience, the pieces of information obtained by military intelligence played a decisive role.[2] In the repolarisation of Europe and the globe, the United States and the Soviet Union also engaged in a latent economic war in addition to the incubating Cold War's unfolding ideological, political and military struggle. The Soviets were lagging behind the Americans regarding their economic resources and scientific infrastructure; therefore, they were sorely in need of gaining nuclear secrets which advanced

to the most significant factor in the 'incubation phase' of the Cold War. The Soviet leaders and Stalin not only surmised it, they had already been aware of it (Holloway 91).

However, with the increase of the efficiency and range of the bomb, its usability decreased, since it seemed to result in a negative-sum game, where even the 'winner' came out as negatively affected by the repercussions. John Lewis Gaddis plausibly argues that even if the atomic bomb had not been created in 1945, nuclear researchers would have drawn the same conclusion about the limitations of applicability of such a highly destructive weapon (Gaddis 94). Because of these considerations, several international conferences convened to discuss the possible international control of nuclear energy. President Truman was on the opinion in July, 1945 that the United States, Great Britain and Canada, the three countries that kept the manufacturing secrets of the bomb, would not uncover their secret until the application of nuclear energy could not be somehow restricted. However, in September, 1945, they dismissed this conception, and strained the point of international control, as the Soviet Union could not accept the Anglo-Saxon monopoly, since it would have left all existing bombs in the possession of the Americans (Gaddis 94-96). Later, in the spring of 1946, Dean Acheson (as chairman of a special committee to prepare a plan for the international control of atomic energy) and David E. Lilienthal (President of the Atomic Energy Commission) presented the Acheson-Lilienthal report to the UN which was later modified by Bernard Baruch, American millionaire and presidential advisor, who invested his wealth into nuclear energy business. The modified proposal still maintained US nuclear monopoly nonetheless and thus was dismissed by the Soviets. The closure of the diplomatic channels also prompted other means to gain information.

The diplomatic blind alley with regard to the internationalisation of nuclear secrets urged the Soviets to speed up their nuclear program which was sorely in need of further detailed information: technological information in particular which could be acquired by way of espionage and information about potential locations of uranium ore as a vital component of the atomic bomb. The Soviet Union could only hope to find uranium on two possible locations. The mining of uranium in Far Eastern deposits were highly unreliable due to the Chinese civil war and the geopolitical instability of the region, and in 1945 it was still uncertain whether China would emerge as a democratic or as a communist country. The only alternative was to find uranium in Europe. During the military occupation of Germany, NKVD agents found uranium in the German side of the Harz Mountains. Consequently, the local mines were immediately put under direct NKVD security control.[3]

The significance of the program was also shown by the fact that Stalin personally met Kurchatov on January 25, 1946 to discuss that the Soviet bomb must be produced quickly. Stalin said that it is "not worth spending time and effort on small-scale work, rather, it is necessary to conduct the work broadly, on a Russian scale, and … in this regard, utmost assistance will be provided".[4] At the same time Stalin emphasised that Kurchatov should personally verify the information gained through espionage, because disinformation was a regular *modus operandi* in military intelligence (Gaddis 95-96). As it can also be seen in Document 4, Kurchatov had to evaluate every report, and he had to digest those pieces of information that were essential for the Soviet nuclear program.

Soviet military intelligence targeting nuclear secrets in the USA and in Great Britain dates back to the 1930s. In the US the main bases of the NKVD's activities were the American Communist Party and those leftish intellectuals who sympathised with the Soviets and communism. The latter group of people gave only a tiny part of American society, especially

compared to the democratic majority, but they meant invaluable sources of information for Soviet spying nonetheless.[5] Specifically, the Soviets primarily targeted university researchers and scholars. NKVD spying was enhanced by the favourable ambience that the American military intelligence considered Nazi Germany and the German military intelligence (*Amtsgruppe Ausland Abwehr*[6]) as the main enemy with regard to the Manhattan Project. Consequently, they misjudged and thus underestimated the performance of Soviet spies.

The NKVD also endeavoured to recruit students and scholars at Cambridge University in Great Britain. The valuable pieces of information retrieved by NKVD agents (that London and Washington were working on a common nuclear program to develop an atomic bomb) were first doubtfully received by Stalin, and the Soviet Premier only changed his opinion on nuclear research by a mere coincidence that happened in April, 1942. Georgy Florov, Soviet physicist, who was browsing Western scientific periodicals and journals for his current research, discovered that all of a sudden all news pertaining to nuclear physics disappeared. Florov sent a letter to Stalin in which the physicist informed the Soviet Premier about this finding. Interestingly enough, Stalin, who was renowned for his paranoid personality, rather believed to a subjective yet cunning evaluation than to previous scientific reports.[7]

The unofficial line of Soviet foreign policy unfolded its activities through the Executive Committee of the Comintern. What is more, this office greatly contributed to all activities of espionage in general and also coordinated Soviet intelligence across the globe. As it can be seen on the basis of the four documents below, the Soviets managed to gain the most vital pieces of information which they needed; therefore, in my opinion, their espionage can be described as multilayered, professional and multifactorial. It was multilayered because intelligence extended both to civil service and research. Moreover, it was utterly professional because American counter-intelligence could not prevent the leaking of information to the Soviet Union. Furthermore, Soviet espionage was multifactorial, as it was also enforced by the unofficial line of Soviet foreign policy through the Comintern. All things considered, the Soviets could calculate their steps by strategically vital timing when planning various covert operations and spying activities.

At the same time, the official line of Soviet foreign policy, particularly in 1945 prior to the interrogation of Niels Bohr and in the final evaluation of the spying information by Igor Kurchatov, introduced a new style of negotiations which showed a more lenient and cooperative attitude, especially by Vyacheslav Molotov. For instance, in the September 1945 London conference of foreign secretaries, Molotov, previously known for his rigid, strict and occasionally galling negotiating style, began with a convincing invective and thus tried to cover the Soviet Union's relative or perceived comparative weakness in nuclear research. The Soviets wanted to pose the question of the atomic bomb as less significant, at least until they managed to create their own nuclear arsenal.

What is more, Stalin much sooner discovered loopholes in nuclear diplomacy than Western leaders, probably because of the more adamant moral commitments and greater qualms of Washington leaders, and due to the Americans' lack of experience in intimidation. In the beginning, Truman showed uncertainty as for the diplomatic and military use of the atomic bomb (Gaddis 95-97). Meanwhile, the Soviet espionage was also enhanced to a great extent by the internationally prevailing 'democratic atmosphere' among the allies. The latter was also reinforced by leading scientists' dedication to internationally disseminating nuclear discoveries. The NKVD did not miss this opportunity, as it can also be surmised from the

‘interrogation of Niels Bohr’ and the evaluation of the results by Kurchatov (See Document 3 and 4).

In order to understand how Soviet espionage was actually construed, four documents were chosen for investigation in this study, each presenting important aspects of Soviet atomic spying (See Documents 1-4). First, the tendency of Soviet espionage related to nuclear research is well-reflected by Boris Merkulov’s (USSR’s People’s Commissar for State Security) report to Lavrenty Beria (USSR People’s Commissar for Internal Affairs) (see Document 1) in which Merkulov mentioned Oppenheimer among the co-operators. It is one of the underlying questions of Soviet atomic spying whether the Soviets managed to establish a contact in the Manhattan Project itself, and whether Julius Robert Oppenheimer, one of the leading scientists of the project, had been a Soviet spy. In this respect a number of analytical remarks should be considered with regard to Document 1.

Obviously, the letter must be read in the context of Soviet intelligence operations in the United States during World War II. Jerrold and Leona Schecter argue that Robert Oppenheimer’s long time membership in the Communist Party of the United States was made secret in 1942 because he was being enlisted as a Soviet asset of intelligence by the Communist Underground to facilitate the obtaining of vital nuclear secrets.[8] According to them, Oppenheimer was registered in the American Communist Party and was also enlisted by the Comintern. Since the FBI continuously observed both Manhattan Project participants and the members of the Communist Party of the USA, and Stalin accepted Roosevelt’s plea to dissolve the Comintern in 1943, the NKVD was forced to revitalise its intelligence channels in the USA. Among other questions, Merkulov’s letter addresses that problem.

Gregory Kheifitz was operative agent under cover as the Soviet vice consul in San Francisco from 1941 to 1944. Though Kheifitz was later recalled to Moscow, it did not happen because of being unable to perform the set task in the document or of inactivity. Rather, he was supposed to participate in a ring led by the resident, Vasily Zarubin, who was presumably also working for the Japanese and the German (Schecter and Schecter 81-82). The charges were, however, dismissed against both of them. The latter case was uncovered by the so-called Mironov affair (See Document 1).

Lieutenant Vasily Dimitrovich Mironov served as an NKGB officer in Washington D.C., who sent an anonymous letter to President J. Edgar Hoover about Soviet spying in the US[9], in which he allegedly disclosed Zarubin’s and Kheifitz’s intelligence activities. The document was registered as an “Anonymous Letter” by the FBI. However, as Lieutenant General Pavel Sudoplatov notes in his memoir[10], it was also Mironov, who in an anonymous letter informed Stalin as well that Kheifitz and Zarubin were probably spying for the Japanese and the Germans simultaneously. According to Sudoplatov, that is why they were recalled to Moscow.

However, the NKVD handled the matter very seriously and refused to confirm the story or to present Mironov’s letter to Stalin personally, at the same time blaming Sudoplatov for leaking a damaging secret. That is why the Soviets disinformed the Americans referring to Kheifitz’s “inactivity” and removed Sudoplatov as the leader of atomic espionage during this critical period of World War II. According to the Schecters, Kheifitz was later “cleared of the charges against him, promoted and given a medal. He was chief of section of Department S, atomic espionage, until he fell victim to the anti-semitic purge of 1947” (Schecter and Schecter 81).

Nonetheless, the Soviets knew that by the end of the war they needed to construct their own bomb and Beria severed all contacts with the American sources in 1946. In my view, it is obvious that the interrogation of Niels Bohr was utterly successful and the NKVD obtained the necessary technological information, which were evaluated by Kurchatov positively, including the enrichment ratios of uranium and the type of modulator they needed in the nuclear reactor (See Documents 3 and 4). The question still remains why the NKVD wished to enlist Oppenheimer in 1944 if he had already been working for the Soviets since 1942? Jerrold and Leona Schecter state that it is because Oppenheimer was never officially recruited as a Soviet agent. Oppenheimer was rather a facilitator; a role the document from Merkulov to Beria described in detail and which "provided cooperation in access to research for several of our tested sources including a relative of [Comrade Browder]" (Schecter and Schecter 315-317).

Therefore, the Soviets rather referred to Oppenheimer and other scientists employed in the Manhattan Project as 'wartime allies' to help the construction of the Soviet atomic bomb before the Nazis. The NKVD intended to recruit Oppenheimer after Kheifitz's and Zarubin's activities were revealed, but their contacts were severed when Earl Browder and the Communist underground could no longer work with Kheifitz and Zarubin. When the Comintern was dissolved in 1943, the NKVD was searching for a new vista to contact Oppenheimer. Perhaps, this is the problem Merkulov was trying to point out to Beria.

If there is documentary testimony or other evidence to support the supposition in the Merkulov letter that Oppenheimer cooperated with the Soviets, then under US law Oppenheimer was a spy. This is precisely the reason why the Soviets insisted that Oppenheimer was a wartime ally, because they knew that if materials leaked to them by Oppenheimer were to be disclosed, then he would have been found guilty of espionage and subsequently persecuted. Therefore, the Soviets decided to protect Oppenheimer's reputation.[11]

Moreover, Gregg Herken raises the question whether it is enough to substantiate treason only on the basis of a single and semantically unambiguous document (Merkulov's letter), unconfirmed allusions to Oppenheimer's membership in a communist organisation and referring to unpublished Soviet sources (177-194). Herken argues that in order to understand the context one must focus on Kheifitz, since he was the source of Merkulov's information. Kheifitz was discharged from service earlier as part of the anti-semitic purge advocated by Stalin (Schecter and Schecter 82) that is why he was later 'distrusted' as well. What is more, Allan Weinstein and Alexander Vassiliev cite a KGB document which shed light on the fact that the Kremlin's spy masters were 'unhappy' with Zarubin's and Kheifitz's performance (Weinstein and Vassiliev 116, 148, 184). According to the authors, "[t]he fact that station chief Grigory Heifetz was recalled to Moscow in 1944 because of his failure to bring any of 'Enormoz's' scientists into the fold suggests, however, that Oppenheimer never agreed to become a source of information for the Soviets, as some recent writers asserted" (Weinstein and Vassiliev 184). In addition to this, as Weinstein and Vassiliev argued the best evidence, although it is always difficult to prove the negative, that Oppenheimer could not have been a spy is that in that case the NKVD would have possessed every bit of information in time to construct an atomic bomb simultaneously with the Americans (162). On the contrary, the blueprints of Fat Man and other substantial nuclear secrets were transmitted to the Kremlin later in the war by two identified Soviet agents, Ted Hall and Klaus Fuchs.[12]

Furthermore, in his book, Hayden Peake also claims that it is up to semantics whether one wishes to call Oppenheimer a spy or not, because it depends on whether one accepts that the antecedent of the "he" in the 4th paragraph of Document 1 is Oppenheimer or not. If Oppenheimer provided "cooperation in access to the research" of "tested sources" to a person he knew to be a Soviet agent or officer, promotes Oppenheimer a knowing NKVD source (Peake 35-40). According to Peake, it was consistent with contemporary NKVD practices and comes as no surprise in the Merkulov letter. It is also the case with the "Mironov Affair": severing the links between the CPUSA and the NKVD was also in line with NKVD policy after obtaining the necessary information regarding a given subject and to consolidate their operations.[13]

As it can be seen from the documents cited, Soviet atomic spying was characterised by purposefully prepared information retrieval, analysis and evaluation. During this process, the activity of Kurchatov's think tank was neatly combined with actual spying activities. The questions posed to Niels Bohr were prepared by Kurchatov himself at the Leningrad Institute of Physics and Technology. Kurchatov was fully aware that Bohr himself belonged to that group of humanist scientists who were idealists concerning the international dissemination of the results of nuclear research. What is more, Niels Bohr was a perfect choice: he returned to Europe, the FBI did not survey him anymore, and the Danish scientist participated in the Manhattan Project, so he could supply the spies with first-hand information.

In line with the Oppenheimer case, many thought that that Bohr was an active Soviet spy. Even Sudoplatov believed that Enrico Fermi and Niels Bohr were cooperating with the NKVD (Sudoplatov et al. 194-195). I think that without the unfolding of relevant GARF documents, one cannot substantiate such a claim for Oppenheimer, Fermi and Bohr, so at this point it is rather up to semantic quibbling whom we call a spy. The arguments analysed thus far rather suggest that, on the other hand, these scientists were either unaware of the intentions of the interviewers or their contacts, or truly believed in the peaceful exploitation of nuclear energy and the international dissemination of nuclear research. Either way, the Soviets profited from them to a great extent.

In sum, it can be argued that the diplomatic behavioural patterns of the Soviet Union and the United States prevailed at the beginning of the new era, but the ambience that induced them in the interwar period did not exist anymore. Accordingly, both the Americans and the Soviets, the latter in particular, tried to underestimate the significance of the atomic bomb during World War II, and they did not attribute overall strategic importance to it (Gaddis 94-96). At the same time, however, the NKVD worked at full blast to obtain relevant information pertaining to vital aspects of nuclear research, including the ratios and methods of enrichment of uranium, not only in the United States, but also in Europe. As it has been shown on the basis of the documents cited, Soviet atomic spying was characterised by purposefully prepared information retrieval, analysis and evaluation. During this process, the activity of Kurchatov's think tank was neatly combined with actual spying activities. The questions posed to Niels Bohr were prepared by Kurchatov himself at the Leningrad Institute of Physics and Technology, relying on the 'idealism' and humanistic attitude of scientists participating in the Manhattan Project to the greatest extent.

In the "incubator phase" of the Cold War the Soviets were capable of very precisely assessing the strategic advantage of the nuclear monopoly of the United States. With the help of a highly cautious but nonetheless efficacious policy, the Soviet military intelligence made all conceivable effort to extort vital information from all possible sources, and thus to be able to

build up nuclear parity and moderate their strategic disadvantage in the foreseeable confrontational period of the Cold War. At the beginning of this process, their initial hardships to catch up with the Americans were greatly enhanced by those pieces of information that they gathered from NKVD sources, which were furthered by the combination of the efforts of the Janus-faced game of Soviet foreign policy and the relevant organisations (military intelligence, research institutions, Political Committee of the Communist Party of the Soviet Union, etc.). Nevertheless, the democratic atmosphere of Western diplomacy and politics, as well as the humanistic scholarly attitude to the dissemination of knowledge also contributed to the success of Soviet atomic spying.

Appendices

Document 1[14]

October 02, 1944. Letter from Boris Merkulov (USSR's People's Commissar for State Security) to Lavrenty Beria (USSR People's Commissar for Internal Affairs)

2 October 4 [1944] TOP SECRET

1107/M URGENT

Copy #2

PEOPLE'S COMMISSAR FOR INTERNAL AFFAIRS OF THE USSR GENERAL COMMISSAR OF STATE SECURITY

Comrade BERIA, L.P.

In accordance with your instruction of 29 September 1944, NKGB USSR continues measures for obtaining more detailed information on the state of work on the [problem of uranium] [handwritten] and its development abroad.

In the period 1942-1942 important data on the start of work in the [USA] [handwritten] on this problem was received from our foreign agent network using the contacts of Comrade Zarubin[15] and Kheifitz[16] in their execution of important tasks in line with the executive committee of the Comintern.

In 1942 one of the leaders of scientific work on [uranium] in the USA, Professor Oppenheimer[17] while being an unlisted (nglastny) member of the apparatus of [Comrade Browder] [handwritten] informed us about the beginning of work.

On the request of Comrade Kheifitz, confirmed by [Comrade Browder,] [handwritten] he provided cooperation in access to research for several of our tested sources including a relative of [Comrade Browder] [handwritten].

Due to implications of the operational situation in the [USA,] [handwritten] dissolution of the [Comintern] [handwritten] and explanations of Comrades Zarubin and Kheifitz on the Mironov affair[18] it is expedient to immediately sever contacts of leaders and activists of the

[American Communist Party] [handwritten] with scientists and specialists engaged in work on [uranium.] [handwritten]

NKGB requests the consent of the leadership [Instancia].

PEOPLE'S COMMISSAR OF STATE SECURITY USSR

Commissar of State Security First Rank

Signed/MERKULOV

Handwritten note by Beria "Correct". 2 October 1944[19]

Printed—3 copies

No. 1 Comrade Beria

No. 2 Sec. NKGB

No. 3 Dept. NKGB

[Ed. Note: On page 1, signed acknowledgement of L. Beria "Received" signed by Merkulov on 3 October 1944.

The original document was typed with blank underlined sections. The missing information was written in later by hand. This security measure made sensitive information available only to "need to know" officials and was a standard Soviet security practice.]

Document 2[20]

Beria's Cover Memo to Stalin

SPECIAL FOLDER

No. 1-1 Copy no.____ Top secret

[Handwritten across top of page: "Make known to Com[rade]. [V.N.] Merkulov

[Chairman of the People's Commissariat of State Security (NKGB) and Beria's

long-time deputy]. L. Beria 8/XII" (8 December)]

[28] November [1945]

To Comrade STALIN I.V.

The famous physicist Professor Niels BOHR[21], who participated in efforts to create the atomic bomb[22], has returned to Denmark from the USA and started working at his Institute of Theoretical Physics in Copenhagen.

Niels BOHR is famous as a progressive-minded scientist and as a staunch supporter of the international exchange of scientific achievements. This gave us grounds to send to Denmark a group of employees, under the pretense of searching for equipment which the Germans had taken from Soviet scientific establishments, who were to establish contact with Niels BOHR and obtain from him information about the problem of the atomic bomb.

The comrades who were sent: Colonel Vasilevsky, the Candidate of physico-mathematical sciences [Yakov] Terletsky, and interpreter-engineer Arutunov, having identified appropriate pretexts, contacted Bohr and organized two meetings with him.

The meetings took place on 14 and 16 November, under the pretense of Soviet scientist Terletsky's visit to the Institute of Theoretical Physics.

Com[rade]. TERLETSKY told BOHR that while passing through Copenhagen, he considered it obligatory to visit the famous scientist and that BOHR's lectures at Moscow University are still warmly recollected there.

In the course of the conversations BOHR was asked several questions which were prepared in advance in Moscow by Academician KURCHATOV[23] and other scientists who deal with the atomic problem.

Attached are the questions, BOHR's answers to them, and also an evaluation of these answers by Academician KURCHATOV.

/L. B E R I A /

[handwritten: "Correct: Chernikov"]

3 copies typed.

Copy #1 — to the addressee

" #2 — to the Secretary of USSR NKVD

" #3 — Department "6"

Executor Sudoplatov

Typist Krylova.

Document 3[24]

November 28, 1945

The Interrogation of Niels Bohr

1. Question: By what practical method was uranium 235 obtained in large quantities, and which method now is considered to be the most promising (diffusion, magnetic, or some other)?

Answer: The theoretical foundations for obtaining uranium 235 are well known to scientists of all countries; they were developed even before the war and present no secret. The war did not introduce anything basically new into the theory of this problem. Yet, I have to point out that the issue of the uranium pile [kotiol; reactor][25] and the problem of plutonium resulting from this — are issues which were solved during the war, but these issues are not new in principle either. Their solution was found as the result of practical implementation. The main thing is separation of the uranium 235 isotope from the natural mixture of isotopes.[26] If there is a sufficient amount of uranium 235, realizing an atomic bomb does not present any theoretical difficulty. For separation of uranium 235, the well-known diffusion method is used, and also the mass-spectrographic method.[27] No new method is applied. The Americans succeeded by realizing in practice installations, basically well-known to physicists, in unimaginably big proportions. I must warn you that while in the USA I did not take part in the engineering development of the problem and that is why I am aware neither of the design features nor the size of these apparatuses, nor even of the measurements of any part of them. I did not take part in the construction of these apparatuses and, moreover, I have never seen a single installation. During my stay in the USA I did not visit a single plant. While I was there I took part in all the theoretical meetings and discussions on this problem which took place. I can assure you that the Americans use both diffusion and mass-spectrographic installations.

2. Question: How can the space charge of the ionic beam in a mass-spectrograph be compensated for?

Answer: If the gas from the vacuum chamber is pumped out completely, we will have to think about a way to compensate for the volume charge of the ionic beam. But if the gas from the chamber is not pumped out completely, it is not necessary to worry about compensating for the volume charge. Or, in fact, compensation for the volume charge of the ionic beam is accomplished by means of the incomplete pumping of gas from the vacuum chamber.

3. Question: Is it feasible to execute a uranium pile using a natural mixture of isotopes and ordinary ["light"—ed.] water as a moderator?[28]

Answer: The question of using ordinary water as a moderator was raised, yet the idea was not realized in practice. The uranium pile with ordinary water is not used. I think that the use of ordinary water as a moderator is not expedient, because light hydrogen absorbs neutrons well, thus turning into heavy hydrogen. This idea is not popular in America. Originally the Americans intended to build piles with heavy water as a moderator, but production of heavy water requires huge expense. During the war the Americans discovered that graphite can serve as a good moderator. They developed this idea in practice and implemented it on a gigantic scale. The construction side, the arrangement and the measurements of this pile, is not known to me.

4. Question: What substance is used for cooling the uranium blocks themselves?

Answer: Normal water is used for cooling the uranium blocks. The problem of cooling the uranium piles is extremely complicated, since cooling the piles literally requires whole rivers. We note that the water used for cooling is brought almost to boiling.

5. Question: What is the temperature change of the multiplication factor, what is the numerical equivalent of the temperature coefficient of the multiplication factor? Or what does

the curve representing the relationship between the multiplication factor and temperature look like?

Answer: The mere fact that the uranium pile is working means that the dependence of the multiplication factor on temperature is not significant. Otherwise, as the result of the violent reaction, the pile would explode. I cannot provide the numerical significance of this dependence, but evidently it is of an insignificant size. However, this factor must not be ignored. It is necessary to maintain the pile in a certain state by regulating the amount of water coming into it. Normally uranium cores are kept in cold condition. It is necessary to keep in mind that if the pile's working regime is disrupted, the pile can be easily spoiled. We also note that the possibility of regulating the uranium pile is provided by the existence of a long period of time /about a second and more/ between the fission of the nucleus and the emission of slowed neutrons, which comprise 1% of the total number of emitted neutrons.

/Then BOHR on the basis of his work, done with [Princeton University physicist John A.] WHEELER, explained this thesis to Prof. TERLETSKY in detail./

6. Question: Are there other supplementary methods for regulating the uranium pile?

Answer: For this purpose, regulating substances which absorb neutrons are loaded into the pile.

7. Question: Which substance is used as the absorber?

Answer: It seems that the absorbent rods are made of cadmium.

8. Question: How many neutrons are emitted from every split atom of uranium 235, uranium 238, plutonium 239 and plutonium 240?

Answer: More than 2 neutrons.

9. Question: Can you not provide exact numbers?

Answer: No, I can't, but it is very important that more than two neutrons are emitted. That is a reliable basis to believe that a chain reaction will most undoubtedly occur. The precise value of these numbers does not matter. It is important that there are more than two.

10. Question: What is the number of spontaneous disintegrations [i.e., fissions—ed.] within a segment of time for all the mentioned substances /uranium 235, uranium 238, plutonium 239, plutonium 240/?

Answer: Few spontaneous disintegrations take place, and in calculations it is not necessary to take them into consideration. The period of spontaneous fission is approximately 7,000 years. I can't cite the precise numbers, but you yourself understand that with such a period of spontaneous disintegration, there is no reason to expect it to influence the process significantly.

11. Question: In order to obtain a large quantity of uranium 235, is either the diffusion method or mass-spectrographic method used alone, or are these two methods also used in combination?

Answer: The Americans use both methods and, besides, they use the combination of these two methods. I think that the combination of these two methods is most effective, because if we presume that we have 0.5% of uranium 235 and if, as a result of applying the diffusion method by passing it through a cascade[29], we increase the uranium content by 5 times, then by putting the uranium after that into the chamber of a spectrograph, we can accelerate the process by 5 times. I do not know for certain, but I think that the Americans use the combination of these two methods very widely.

12. Question: How stable is the multi-stage machine?

Answer: The fact that diffusion cascades of very many stages already work in the USA shows that the process can and does take place. And it is not new. As you know, the German scientist [Gustav] HERTZ long before the war proved already that this process was possible, when he split helium, neon.

13. Question. How is high productivity achieved using the mass-spectrographic method; is it by constructing a large number of ordinary spectrographs, or by constructing a few powerful spectrographs?

Answer: Both. You cannot imagine what an enormous number of huge spectrographs the Americans built. I do not know their size and number, but I know that it is something incredible. From the photographs which I saw it is possible to conclude that these are gigantic buildings with thousands of apparatuses installed in them, and that many plants like this were built. In such a way the Americans built a large number of big spectrographs.

14. Question: By what method is it possible to obtain high ion charges of uranium or its compounds?

Answer: By constructing a large and powerful mass-spectrograph.

15. Question: Does the pile begin to slow as the result of slag formation in the course of the fission of the light isotope of uranium?

Answer: Pollution of the pile with slag as the result of the fission of a light isotope of uranium does occur. But as far as I know, Americans do not stop the process specially for purification of the pile. Cleansing of the piles takes place at the moment of exchange of the rods for removal of the obtained plutonium.

16. Question: How often is plutonium removed from the machine and how are the terms for the removal determined?

Answer: I do not know for sure. By unconfirmed hearsay, the removal of the rods takes place once a week.

17. Question: Does plutonium 240 split under the influence of slow neutrons? Has the possibility of plutonium 240 fission been proved experimentally?

Answer: It is known that the fission of all even isotopes, uranium 234, uranium 238 and plutonium 240, requires significantly more energy than uneven isotopes /let's recollect [Austrian physicist Wolfgang] Pauli's principle/, and that the energy released by plutonium

240 must be equal to the energy released by the fission of uranium 239. /At this point BOHR, illustrating his speech with graphs from his works, gave a detailed foundation for the fact that the question of using plutonium 240 is not very sensible./ So far nobody has proved by experiment that it is possible to split plutonium 240.

18. Question: Does a uranium pile using heavy water as a moderator exist, or are all working piles uranium-graphite?

Answer: All piles working in the USA have graphite moderators. You evidently know that the production of heavy water demands an enormous amount of electric power. Before the war the production of heavy water was organized only in Norway.[30] And we all bought heavy water there. We note that during the war the Germans applied much effort in order to carry out processes with heavy water, but they did not manage to collect the amount of heavy water sufficient to start a pile. The Americans found it possible to use graphite as a moderator and accomplished this idea with considerable success. Therefore, as far as I know, they gave up using piles with heavy water for industrial production. The Canadians chose another way, deciding to construct piles with heavy water, but these piles have not been activated for the same reason: they cannot accumulate for this purpose the necessary amount of heavy water. I consider it necessary to stress that I received this information during informal conversations with my colleagues.

19. Question: Of which substance were atomic bombs made?

Answer: I do not know of which substance the bombs dropped on Japan were made. I think no theoretician will answer this question to you. Only the military can give you an answer to this question. Personally I, as a scientist, can say that these bombs were evidently made of plutonium or uranium 235.

20. Question: Do you know any methods of protection from atomic bombs? Does a real possibility of defense from atomic bombs exist?

Answer: I am sure that there is no real method of protection from atomic bomb. Tell me, how you can stop the fission process which has already begun in the bomb which has been dropped from a plane? It is possible, of course, to intercept the plane, thus not allowing it to approach its destination—but this is a task of a doubtful character, because planes fly very high for this purpose and besides, with the creation of jet planes, you understand yourself, the combination of these two discoveries makes the task of fighting the atomic bomb insoluble. We need to consider the establishment of international control over all countries as the only means of defense against the atomic bomb. All mankind must understand that with the discovery of atomic energy the fates of all nations have become very closely intertwined. Only international cooperation, the exchange of scientific discoveries, and 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. This is the only correct method of defense. I have to point out that all scientists without exception, who worked on the atomic problem, including the Americans and the English, are indignant at the fact that great discoveries become the property of a group of politicians. All scientists believe that this greatest discovery must become the property of all nations and serve for the unprecedented progress of humankind. You obviously know that as a sign of protest the famous OPPENHEIMER retired and stopped his work on this problem. And PAULI[31] in a

conversation with journalists demonstratively declared that he is a nuclear physicist, but he does not have and does not want to have anything to do with the atomic bomb.

I am glad to note that today in the local newspaper there appeared a report that [British Prime Minister Clement] ATTLEE[32] and [U.S. President Harry] TRUMAN[33] began a consultation with the USSR on the establishment of international control over the use and production of atomic bombs. Yet, I have to point out I view such reports in local newspapers very skeptically. But the mere fact that ATTLEE, TRUMAN, and [Canadian Prime Minister Mackenzie] KING[34] conduct these negotiations is very notable. Let us see where they will lead.[35] We have to keep in mind that atomic energy, having been discovered, cannot remain the property of one nation, because any country which does not possess this secret can very quickly independently discover it. And what is next? Either reason will win, or a devastating war, resembling the end of mankind.

21. Question: Is the report which has appeared about the development of a super-bomb justified?

Answer: I believe that the destructive power of the already invented bomb is already great enough to wipe whole nations from the face of the earth. But I would welcome the discovery of a super-bomb, because then mankind would probably sooner understand the need to cooperate. In fact, I believe that there is insufficient basis for these reports. What does it mean, a super-bomb? This is either a bomb of a bigger weight then the one that has already been invented, or a bomb which is made of some new substance. Well, the first is possible, but unreasonable, because, I repeat, the destructive power of the bomb is already very great, and the second—I believe—is unreal.

22. Question: Is the phenomenon of overcompression of the compound under the influence of the explosion used in the course of the bomb explosion?

Answer: There is no need for this. The point is that during the explosion uranium particles move at a speed equal to the speed of the neutrons' movement. If this were not so the bomb would have given a clap and disintegrated as the body broke apart. Now precisely due to this equal speed the fissile process of the uranium continues even after the explosion.

Document 4[36]

Top Secret

EVALUATION

of the answers given by Professor Niels BOHR to the questions on the atomic problem.

Niels BOHR was asked two groups of questions:

1. Concerning the main directions of the work.

2. Those containing concrete physical data and constants.

Definite answers were given by BOHR to the first group of questions.

BOHR gave a categorical answer to the question about the use of methods for obtaining uranium 235 in the USA, which completely satisfied the correspondent member of the Academy of Science Prof. [Isaak Konstantinovich] KIKOIN[37], who put this question.

Niels BOHR made an important remark dealing with the effectiveness of using uranium in the atomic bomb. This remark must undergo a theoretical analysis, which should be the task of Professors [Lev Davidovich] LANDAU[38], [A.B.] MIGDAL[39], and [Isaak I.] POMERANCHUK.[40]

Academician /KURCHATOV/

" " of December 1945

Dec 15, 1945

Works Cited

- *Amtsgruppe Ausland Abwehr*. Available at URL: http://www.lexikon-der-wehrmacht.de/Gliederungen/Oberkommando/AmtAusland.htm Access: 30.11.2014.
- "Beria's Cover Memo to Stalin on Niels Bohr," November 28, 1945, History and Public Policy Program Digital Archive, State Archive of the Russian Federation (GARF). Translated for Cold War International History Project by Mark H. Doctoroff and published in CWIHP Bulletin No. 4, Fall 1994, "Soviet Espionage and the Bomb." Available at: URL:http://digitalarchive.wilsoncenter.org/document/111837. Accessed: 28.11.2014.
- "Kurchatov's Evaluation of Niels Bohr's Questioning," November 28, 1945, History and Public Policy Program Digital Archive, State Archive of the Russian Federation (GARF). Translated for Cold War International History Project by Mark H. Doctoroff and published in CWIHP Bulletin No. 4, Fall 1994, "Soviet Espionage and the Bomb." Available at: URL:http://digitalarchive.wilsoncenter.org/document/111838 Accessed: 26.11.2014.
- "Letter from Boris Merkulov (USSR Commissar for State Security) to Lavrenty Beria (USSR People's Commissar for Internal Affairs)," October 02, 1944, History and Public Policy Program Digital Archive, Reproduced from Schecter, Jerrold L. and Leona P. 2002. *Sacred Secrets: How Soviet Intelligence Operations Changed American History*. Washington DC: Brassey's, 315-317. See also Cold War International History Project e-Dossier no. 11, "Was Oppenheimer a Soviet Spy?" Available at: URL:http://digitalarchive.wilsoncenter.org/document/111512 Accessed: 28.11.2014.
- "The Interrogation of Niels Bohr," November 28, 1945, History and Public Policy Program Digital Archive, State Archive of the Russian Federation (GARF). Translated for Cold War International History Project by Mark H. Doctoroff and published in CWIHP Bulletin No. 4, Fall 1994, "Soviet Espionage and the Bomb." Available at URL:http://digitalarchive.wilsoncenter.org/document/111839 Access: 28.11.2014.
- "The State of Work in the Utilization of Atomic Energy in Capitalist Countries." 2000. In: *Atomic Project in the USSR*. Vol. 2. 1938-1954. Moscow: Ministry of Atomic Energy of Russia.

- Benson, Robert Louis and Michael Warner, eds. 1996. *VENONA Soviet Espionage and the American Response 1919-1957*. Washington: NSA, CIA.
- Churchill, Winston. 1989. *A második világháború*. Vol. 2. Budapest: Európa Könyvkiadó.
- De Tocqueville, Alexis. 2010. *Democracy in America*. (Trans. James T. Schleifer, ed. Eduardo Nolla). Indianapolis: Liberty Fund.
- Fischer, Ferenc. 1992. *A megosztott világ. A Kelet-Nyugat, Észak-Dél nemzetközi kapcsolatok fő vonásai /1945-1989/.* Budapest, Dialóg Campus Kiadó.
- Gaddis, John Lewis. 1997. *We Now Know: Rethinking Cold War History*. Oxford: Oxford University Press.
- Genoud, François. ed. 1961. *The Testament of Adolf Hitler: The Hitler-Bormann Documents, February-April 1945*. London: Icon Books.
- Herken, Gregg. 2002. *Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence and Edward Teller*. New York: Henry Holt and Company.
- Holloway, David. 1994. *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939-1954*. New Haven: Yale University Press.
- Kennedy, Paul. 1988. *The Rise and Fall of the Great Powers*. London: Unwin Hyman.
- Peake, Hayden. 2000. *The Private Life of Kim Philby: The Moscow Years*. New York: Fromm International.
- Schecter, Jerrold L. and Leona P. 2002. *Sacred Secrets: How Soviet Intelligence Operations Changed American History*. Washington DC: Brassey's, 2002.
- Sudoplatov, Pavel, Anatoly Sudoplatov, Jerrold L. Schecter and Leona P. Schecter. 1994. *Special Tasks: The Memoirs of an Unwanted Witness – A Soviet Spymaster*. Boston: Little, Brown.
- Weinstein, Allan and Alexander Vassiliev. 1999. *The Haunted Wood: Soviet Espionage in America—the Stalin Era*. New York: Random House.
- Williams, Robert Chadwell. 1987. *Klaus Fuchs: Atom Spy*. Cambridge: Mass., Harvard University Press.
- Zsukov, Georgij K. 1976. *Emlékek, gondolatok*. [Ford. Galsai Pongráczné et al.]. Vol. II. Budapest: Kossuth – Zrínyi.

Notes

[1] For the discussion of antagonistic cooperation and its dissolution see: Fischer, Ferenc. 1992. *A megosztott világ. A Kelet-Nyugat, Észak-Dél nemzetközi kapcsolatok fő vonásai (1945-1989)*. Budapest, Dialóg Campus Kiadó, 9-110.; Gaddis, John Lewis. 1997. *We now know: Rethinking Cold War History*. Oxford: Oxford University Press, 1-85. ↩

[2] Kurchatov's remark was also echoed by Molotov: "It was a very good intelligence operation by our Chekists. […] They neatly stole just what we needed." Gaddis, 94. ↩

[3] Sudoplatov, Pavel, Anatoly Sudoplatov, Jerrold L. Schecter and Leona P. Schecter: *Special Tasks: The Memoires of an Unwanted Witness – A Soviet Spymaster*. Boston: Little, Brown, 1994, 198-199. ↩

[4] For the details of the discussion see Gaddis, 95. ↩

[5] This study does not examine the Rosenberg case and trial, as it is relatively well-known, richly documented and studies on the case have mushroomed since the trial. ↩

[6] The organisation was led by Admiral Wilhelm Canaris from Jan 1, 1935 to February 8, 1944. It was subordinated to the *Oberkommando der Wehrmacht* (Supreme Command of German Military Forces), and had two major offices: *Abwehr Ausland* (foreign military intelligence) and another that had three departments, *Abwehr I*., *II*., and *III*. Interestingly enough, it was *Abwehr I*. that conducted military intelligence and not *Abwehr Ausland*. The latter rather dealt with propaganda and press for the OKW, as well as maintained relations with German military attachés around the world. For more details see: http://www.lexikon-der-wehrmacht.de/Gliederungen/Oberkommando/AmtAusland.htm (access: 11.30.2014). ↩

[7] For the Florov report see: Williams, Robert Chadwell. 1987. *Klaus Fuchs: Atom Spy*. Cambridge: Harvard University Press, 58-59.; see also Holloway, 92-95. ↩

[8] Jerrold L. Schecter and Leona P. Schecter: *Sacred Secrets: How Soviet Intelligence Operations Changed American History*. Washington DC: Brassey's, 2002, 80-81. ↩

[9] For the Anonymous Letter to Hoover, received on August 7, 1943, in the Russian original with English translation see: Benson, Robert Louis and Michael Warner. 1996. eds. *VENONA Soviet Espionage and the American Response 1919-1957*. Washington: NSA, CIA, 51-53. ↩

[10] Sudoplatov, Pavel, Anatoly Sudoplatov, Jerrold L. Schecter and Leona P. Schecter: *Special Tasks: The Memoires of an Unwanted Witness – A Soviet Spymaster*. Boston: Little, Brown, 1994, 196-197. ↩

[11] The Oppenheimer files are still classified in the GARF (General Archive of the Russian Federation), in the Soviet Intelligence Archive and the Presidential Archives. No publication of notable nuclear research documents of 1944 and 1945 appeared with regard to this topic. Nevertheless, Oppenheimer appears as an unlisted member of the American Communist Party in a Soviet document (January 7, 1946). See "The State of Work in the Utilization of Atomic Energy in Capitalist Countries," in: "Atomic Project in the USSR, Vol. II. 1938-1954". Moscow: Ministry of Atomic Energy of Russia, 2000.; What is more, President Putin claimed in Larry King Live at the CNN (September 8, 2000) that many American scientists were enlisted as co-operators by the Soviet military intelligence. Putin obviously did not name any of them. ↩

[12] See: Williams, Robert Chadwell. 1987. *Klaus Fuchs: Atom Spy*. Cambridge: Harvard University Press. ↩

[13] The "Mironov Affair" was also a factor in the decision. Peake claims that "Mironov was a deranged NKGB officer, so much so that even in Stalin's NKGB he was not shot immediately, but put in a mental hospital. When he was recalled he wrote a letter to Stalin. Whether he mentioned the letter to the FBI is doubtful since he was not summarily executed. Likewise he apparently didn't mention giving up other Soviet assets since they were not disturbed. But he must have mentioned some charges against his boss (Zarubin), either in the letter or interrogation, in the States or Moscow, since the latter was recalled." Peake, 38-39. ↩

[14] "Letter from Boris Merkulov (USSR Commissar for State Security) to Lavrenty Beria (USSR People's Commissar for Internal Affairs)," October 02, 1944, History and Public Policy Program Digital Archive, Reproduced from Jerrold L. & Leona P. Schecter, *Sacred Secrets: How Soviet Intelligence Operations Changed American History*, (pp. 315-317). See also Cold War International History Project e-Dossier no. 11, "Was Oppenheimer a Soviet Spy?" Available at: URL:http://digitalarchive.wilsoncenter.org/document/111512 (access: 28.11.2014). ↩

[15] Vasily M. Zarubin: NKGB agent, posed as a New York citizen, maintained active relations with the American Communist Party. ↩

[16] Grigory Kheifitz: NKGB agent, served as a coordinator between the Executive Committee of the Comintern and the Soviet spies in the USA. ↩

[17] Julius Robert Oppenheimer (1904-1967): American nuclear physicist, the director of the Manhattan Project between 1943 and 1945 in Los Alamos (Los Alamos Laboratory), then president of the Atomic Energy Commission of the USA between 1946 and 1952. Oppenheimer belonged to those scientists who opposed the development of thermonuclear weapons. That is why he was eventually dismissed from US thermonuclear research after 1953. In 1963 he won the Enrico Fermi Prize. ↩

[18] Vasily Dimitrovich Mironov lieutenant-colonel, an NKGB officer serving in Washington D.C., sent an anonymous letter to President J. Edgar Hoover about Soviet spying in the US, in which he disclosed Zarubin's and Kheifitz's intelligence activities. The document was registered as "Anonymous Letter" by the FBI. However, as Sudoplatov notes in his memoir (Sudoplatov 1994), it was also Mironov, who in an anonymous letter informed Stalin that Kheifitz and Zarubin were probably spying for the Japanese and the Germans simultaneously. According to Sudoplatov, that is why they were recalled to Moscow. ↩

[19] On page 1, signed acknowledgement of L. Beria "Received" signed by Merkulov on 3 October 1944. ↩

[20] "Beria's Cover Memo to Stalin on Niels Bohr," November 28, 1945, History and Public Policy Program Digital Archive, State Archive of the Russian Federation (GARF). Translated for Cold War International History Project by Mark H. Doctoroff and published in CWIHP Bulletin No. 4, Fall 1994, "Soviet Espionage and the Bomb." Available at: URL:http://digitalarchive.wilsoncenter.org/document/111837 (accessed: 28.11.2014). ↩

[21] Niels Bohr (1885-1962): Danish physicist, who lived and worked in Copenhagen. His main research field was the spectroscopic analysis of the hydrogen. During World War II Bohr emigrated to the USA, and he also participated in the research that paved the road to the construction of the first atomic bomb. At the end of the war he returned to Copenhagen, and became the founder-president of the Copenhagen Institute of Theoretical Physics. According to former KGB agent, Pavel Sudoplatov, Niels Bohr leaked nuclear secrets to the Soviets, which in turned helped to create the first Soviet atomic bomb in 1949. ↩

[22] The Manhattan Project was one of the most secretly developed scientific projects of the war, also classified as a military operation. Its main purpose was to develop the atomic bomb, employing the most brilliant physicists of the time, including J. Robert Oppenheimer, Enrico Fermi, Szilárd Leó, and Niels Bohr. Research advanced quite successfully in the USA from

1942, and the first atomic bomb was exploded in Alamogordo (Los Alamos, New Mexico) on July 16, 1945. It was the type of bomb that destroyed two Japanese cities, Hiroshima and Nagasaki on Aug 6 and 9, 1945. ↩

[23] Igor Vasilyevich Kurchatov (1903-1960): Soviet physicist. He was the director of the Leningrad Institute of Nuclear Physics from 1938, and later elected as the director of the Atomic Energy Institute at the Academy of Sciences of the USSR. Kurchatov played a key role in developing the first Soviet atomic bomb (1949) and thermonuclear bomb (1953). In 1949 he was also elected to the Supreme Council of AS of the USSR. ↩

[24] "The Interrogation of Niels Bohr," November 28, 1945, History and Public Policy Program Digital Archive, State Archive of the Russian Federation (GARF). Translated for Cold War International History Project by Mark H. Doctoroff and published in CWIHP Bulletin No. 4, Fall 1994, "Soviet Espionage and the Bomb." Available at URL:http://digitalarchive.wilsoncenter.org/document/111839 (access: 28.11.2014). ↩

[25] The nuclear reactor is a device which produces transfers of energy by heat by coordinated and regulated radioactivity. If certain atomic cores are bombarded by neutrons, then further neutrons are produced. If the speed of the neutrons is not too rapid, then this process maintains itself. The reactor needs fuel (Pu-233, Pu-235, Pu-239 mass numbers) and a moderator which regulates the speed and number of neutrons. In addition to these, a heat exchange recirculation system is also indispensable which utilises the heat that is produced during the process, usually through a steam turbine of an ordinary plant. The kettle reactor uses the steam of the cooling water to drive the turbines. In the pressurised water reactor the cooling liquid is water under pressure, which can thus be heated to extremely high degree without evaporation, and which produces steam through its heat transmitted by its heat exchanger. The gas-cooled reactors use carbon-dioxide or other gases as a cooling medium, which also cools the water of the turbine through a heat exchanger. The rapid reactor does not have a moderator, and usually utilise liquid natrium as a cooling liquid. The breeder reactor produces U-238 enriched by Pu-239 as well as Pu-239. This reactor type is used to produce the active material component of atomic bombs. ↩

[26] Uranium has more than one isotope depending on how many neutrons can be found in its core. For example, the atomic mass number of U-235 is 235, while the mass number of U-238 is 238; therefore the latter has 3 extra neutrons in its core. ↩

[27] Mass-spectroscopy: Mass spectrometry is used to determine the isotopic composition of elements within a sample. A mass spectrometer determines the mass of a molecule (or atom) by measuring the mass-to-charge ratio (m/z) of its ion. Ions are generated by inducing either the loss or gain of a charge from a neutral species. Once formed, ions are electrostatically directed into a mass analyzer where they are separated according to m/z and finally detected. These instruments usually use a single magnet to bend a beam of ionized particles towards a series of Faraday cups which convert particle impacts to electric current. The result of ionization, and ion separation, and detection is a spectrum that can provide molecular mass and even structural information. In one common procedure, ionization is effected by a high energy beam of electrons, and ion separation is achieved by accelerating and focusing the ions in a beam, which is then bent by an external magnetic field. The ions are then detected electronically and the resulting information is stored and analyzed in a computer. A perpendicular magnetic field deflects the ion beam in an arc whose radius is inversely proportional to the mass of each ion. Lighter ions are deflected more than heavier ions. By

varying the strength of the magnetic field, ions of different mass can be focused progressively on a detector fixed at the end of a curved tube (also under a high vacuum). ↩

[28] Moderator is used in reactors to regulate the number, direction and speed of neutrons, mostly slowing them down. ↩

[29] Diffusion cascade: it is one of the fundamental parts of the nuclear reactor – electric rectifier equipment. ↩

[30] Norway produced heavy water and nitrate. The main facilities were located in Rjukan (at Vemork, Norsk Hydro) which were blown up by a sabotage action organised by the Allies in February, 1943. It meant a substantial loss to the long ongoing German nuclear research and developments. During their meeting in Quebec, Winston Churchill and Franklin D. Roosevelt decided that they would sabotage the German nuclear program with all means possible. In the mean time, the Germans rebuilt the Rjukan factory, but in a successful allied air attack, 150 B-29 bombers virtually devastated Rjukan and its vicinity. The destruction of the infrastructure producing heavy water was a significant step towards foiling Nazi Germany's nuclear plans. What is more, the ship that carried heavy water from Norway to Germany in January, 1944, was sunk by the Norwegian resistance. These circumstances also reinforce Bohr's statements. ↩

[31] Wolfgang Pauli (1900-1958): Austrian physicist. Pauli studied at the University of Munich from 1923 to 1928, later worked as a lecturer in Hamburg, and he was eventually employed as a research fellow at the Institute of Theoretical Physics in Zurich. He migrated to the United States in 1940 and continued his research at Princeton University. His main contribution to theoretical physics was his results in quantum physics. ↩

[32] Clement Attlee (1883-1967): British politician. Attlee graduated as an economist at the London School of Economics, but also joined the Labour Party and became one of the most influential figures in the labour movement in interwar Britain. He was Deputy Prime Minister in Winston Churchill's war cabinet (1940 – 1945) and Prime Minister of the first two Labour governments after the war (1945-1950, 1950-1951). ↩

[33] Harry S. Truman (1884-1972): after the death of Franklin D. Roosevelt, Truman first filled the position of the President of the United States. He was re-elected in April, 1945 and served as the 33rd president (1945-1953). Truman is usually referred to due to his containment policy which was first outlined in his famous presidential speech to the Congress (March 12, 1947) in which he promised to help Turkey and Greece fighting against communist partisans with 400 million dollars (also known as the Truman Doctrine). ↩

[34] William Lyon Mackenzie King (1874-1950): King first studied at the University of Toronto, later obtained a doctoral degree in political sciences at Harvard University. He was elected as the Prime Minister of Canada in 1921 (he was also the Foreign Secretary of the country simultaneously), a position which he held until 1948. ↩

[35] On 15 November 1945, at a summit in Washington, Harry S. Truman, Clement Attlee, and Mackenzie King issued a tripartite declaration recognizing the impossibility of defense against the atomic bomb or keeping a national monopoly over atomic weapons or science, and calling for the United Nations to create a commission to establish international exchange

of scientific information. This policy led to the unsuccessful UN talks over the Baruch and Gromyko plans for international control. ↩

[36] "Kurchatov's Evaluation of Niels Bohr's Questioning," November 28, 1945, History and Public Policy Program Digital Archive, State Archive of the Russian Federation (GARF). Translated for Cold War International History Project by Mark H. Doctoroff and published in Cold War International History Project Bulletin No. 4, Fall 1994, "Soviet Espionage and the Bomb." Available at: URL:http://digitalarchive.wilsoncenter.org/document/111838 (accessed: 26.11.2014). ↩

[37] Isaak Konstantinovich Kikoin (1908-1984): Soviet physicist and a member of the Academy of Sciences of the USSR. Kurchatov and Kikoin were the founding fathers of the Kurchatov Atomic Energy Institute, which played a vital role in developing the first Soviet nuclear reactor in 1946. It also contributed to further Soviet nuclear research and development, eventually leading to the first atomic bomb test in 1949. ↩

[38] Lev Davidovich Landau (1908-1968): Soviet nuclear physicist. He worked at the Institute of Physical Problems from 1935, and his research focused on experiments with helium. Landau won the Nobel Prize in 1962. ↩

[39] Arkady Denisovich Migdal (1911-1991): Soviet physicist, an expert of quantum theory. ↩

[40] Isaac Jacobevich Pomeranchuk (1913-1966): Soviet physicist, a researcher at the Institute of Theoretical and Experimental Physics. ↩