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UMB History Conference

19 March 2012

### The Power of Fission:

#### How the Discovery of Fission Adversely Affected US/Soviet Relations

In the first forty years of the twentieth century an idealistic approach to a peaceful international science community existed but dissolved when the discovery of fission intersected with the need for the Allied Powers to defeat Germany and Japan at all costs. In 1945, Pyotr Kapitsa, a Soviet physicist reaffirmed this hope by stating, “there was really no such thing as Soviet science or British science; there was only one science, devoted to the betterment of human welfare.”<sup>1</sup> The research presented in this work chronicles the path from a peaceful international science community to a world in which nations isolated their physicists to compete in the creation of super bombs. The analysis of that path reveals the actions and motives of physicists and government officials that damaged the relationship between the United States and the Soviet Union.

At the dawn of the twentieth century the science community was convicted that the interests of humanity were prioritized over nationalistic interests.<sup>2</sup> In 1918, leading physicist Albert Einstein felt compelled to state, “By heritage I am a Jew, by nationality Swiss, by conviction a human being and only a human being with no particular penchant for a state or national entity.”<sup>3</sup> However, world war created a direct connection between science and weaponry as nations saw the discoveries in labs transform into weapons on the battlefield.<sup>4</sup> Despite ideals of maintaining a working international community, evidence of impending change could be found in

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<sup>1</sup> Holloway, *Stalin and the Bomb*, (Yale University Press: New Haven, 1994)

<sup>2</sup> Alex Keller, *The Infancy of Atomic Physics: Hercules in his Cradle* (Oxford: Clarendon Press 1983), p. 3

<sup>3</sup> Albert Einstein, *Collected Papers of Albert Einstein*, vol. 8A: *The Berlin Years: Correspondence, 1918*, Robert Schulmann et al., eds. (Princeton: Princeton University Press, 1998b)

<sup>4</sup> Robert Jungk, *Brighter than a Thousand Suns*, James Cleugh, trans. (Harcourt: New York, 1958), p. 4

each country as scientists began to see how a difference in social opinions affected their approach to cooperation.<sup>5</sup>

In December 1938 Otto Hahn and Fritz Strassmann bombarded uranium with neutrons and they saw the atom split into separate elements. Atomic energy had been liberated and they named it fission.<sup>6</sup> The greater potential of this discovery was the prospect that, if controlled properly, neutrons would be able to produce a continuous chain reaction of atom splitting that could possibly result in a very powerful explosion.<sup>7</sup> News of the discovery spread quickly within the science community.<sup>8</sup> However, with the increasing war in Europe many physicists had growing concerns that if a useable destructive bomb became a reality, “Hitler’s success could depend on it.”<sup>9</sup> Leo Szilard, a Hungarian refugee living in the United States, believed that the implications of fission should have been discussed privately amongst American, English, and French physicists. He suggested that publications discussing new findings be halted in order to keep the information out of Germany’s hands. After several years the science community listened to Szilard and voluntarily chose to stop publishing documents about atomic physics.<sup>10</sup>

As the war in Europe progressed the communication between Western and Soviet scientists fizzled.<sup>11</sup> The Nazi-Soviet pact was of some concern to the west and initially discouraged them from informing their Soviet colleagues of the impending voluntary ban on fission publications.<sup>12</sup> Mostly, however, the Western scientists were preoccupied by Germany and rarely noticed Soviet research, a distant fourth behind Britain, the United States, and France. However, the Soviet physicists had no reason to halt conversation with their colleagues in the West,<sup>13</sup> as it enhanced Soviet research.<sup>14</sup> By the time the Soviet Union entered the war with Germany in June of 1941

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<sup>5</sup> Keller, Infancy, intro

<sup>6</sup> Holloway, Stalin, p. 49-50

<sup>7</sup> Philip Cantelon and Robert C. Williams, ed., The American Atom: A Documentary History of Nuclear Policies from the Discovery of Fission to the Present, 1939-1984 (University of Pennsylvania Press: Philadelphia, 1962), p.2

<sup>8</sup> Holloway, Stalin, p.49-50

<sup>9</sup> Edward Teller, The Legacy of Hiroshima (Doubleday: New York, 1962), p. 9ff

<sup>10</sup> Holloway, Stalin, p. 59

<sup>11</sup> Szilard, His

<sup>12</sup> Holloway, Stalin, p.58

<sup>13</sup> Herbert York, Advisors: Oppenheimer, Teller, and the Bomb (San Francisco: W. H. Freeman & Co., 1976) p. 29

<sup>14</sup> Holloway, Soviet, p.16-17

most of the leading physicists in Europe had escaped to join forces with the forefront of scientific discovery in either Britain or the United States. If they were not in one of those two nations by the time Hitler invaded they were stuck in an occupied country and unable to communicate with their colleagues. The international community had condensed to two Western nations and communication with the Soviet physicists slowed until it finally stopped.<sup>15</sup>

At this point not a single atomic bomb project was underway in any country. Most of the information suggested it would require large amounts of enriched uranium, a proposition that was likely too expensive and labor intensive for any nation to attempt until long after the war was over.<sup>16</sup> The Soviets continued their research on atomic fission but without any great urgency.<sup>17</sup> Khlopin, a leading Soviet physicist, concluded that it was premature to ask the government for funding; they may have needed to save their resources in case the war came to the Soviet Union.<sup>18</sup> However, government interaction concerning atomic physics in the United States began quickly. Szilard was convinced that Germany was working on a bomb project and decided it was imminent that the Allies rapidly advance research. He wrote a letter for FDR and asked Einstein to send it in his own name. This letter stated that, "extremely powerful bombs of a new type may thus be constructed"<sup>19</sup> and prompted FDR to establish The Committee on Uranium in October 1939.<sup>20</sup>

In December 1941 "the entry of the United States into WWII caused the abandonment of all projects aimed at developing atomic energy as a source of power and gave added impetus to the efforts to build an atomic bomb."<sup>21</sup> General Leslie M. Groves was assigned to oversee The Manhattan Project.<sup>22</sup> The top-secret project combined the efforts of both military organizations and civilian companies, cost approximately \$2.2 billion, and employed the minds of every significant scientist living in the United States that was not already a soldier. In just two and half

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<sup>15</sup> Holloway, Stalin, p.58

<sup>16</sup> Holloway, Stalin, p.58-59

<sup>17</sup> Holloway, Stalin, p. 68

<sup>18</sup> *ibid*

<sup>19</sup> "Albert Einstein's Letters to President Franklin Delano Roosevelt," E-Word, 2-20-1997, <http://hypertextbook.com/eworld/einstein.shtml>

<sup>20</sup> Rhodes, Making, p. 331

<sup>21</sup> Groves, Now, p. 9

<sup>22</sup> Groves, Now, pp. 9-13

years a successful bomb testing took place in New Mexico. At the project's peak, in the spring of 1945, over 130,000 people were working on the Manhattan Project and the Soviet Union had just realized a bomb-building project would be possible.<sup>23</sup>

Initially, FDR set a policy that the United States would not share information about the Manhattan Project with any other nation but Churchill pleaded with FDR to reconsider in order to help secure Britain's future. FDR signed the Quebec Agreement on August 17, 1943, which established communication between the United States and Great Britain on all matters of the Manhattan Project. In his memoir, General Groves states that, "Britain was... vitally concerned with being able to maintain her future independence in the face of the international blackmail that the Russians might eventually be able to employ."<sup>24</sup> While the immediate fear was Germany, the future concern was the Soviet Union. Therefore, Stalin would be left out of negotiations.<sup>25</sup>

Throughout the war the United States continued to question what, if anything, to tell the Soviet Union about the atomic bomb. There were conflicting opinions on this subject. Niels Bohr, a highly respected Danish physicist, saw the benefits to informing Stalin before testing a bomb, before certainty of a successful bomb, and before the war ended. Bohr wanted all three nations to discuss ways of handling international control of this new super bomb. He feared a schism in the alliance between the United States and the Soviet Union due to misappropriation of information. Further, he was concerned this schism could create a tenuous and competitive political climate that would lead to a nuclear arms race. He also hoped that using the atomic bomb to open international discussion on the dangers associated with the possession of nuclear weapons would create change in international political policy.<sup>26</sup> The only way to convince Stalin of the need for international control of atomic energy, Bohr argued, was to include him in the discussion early in order to

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<sup>23</sup> United States Department of Energy, [The Manhattan Project, Making the Atomic Bomb](#) (US DOE: Washington D.C., 2005).

<sup>24</sup> Groves, [Now](#), p. 132

<sup>25</sup> Franklin D. Roosevelt and Joseph V. Stalin, [My Dear Stalin: Complete Correspondence Between Franklin D. Roosevelt and Joseph V. Stalin](#) Susan Butler, ed. (Yale University Press: New Haven, 2005), p.151

<sup>26</sup> Niels Bohr, "Open Letter to the United Nations" (June 9, 1950). This letter explains his overall views as well as contains excerpts from the July 3, 1944 and March 24, 1945 memoranda

convince him he was not being conspired against.<sup>27</sup> Oppenheimer echoed this sentiment. He stated, "we might say [to the Soviets] that a great national effort had been put into this project and express a hope for cooperation with them in this field."<sup>28</sup> His concern was that, "the security of all peoples would be jeopardized by a failure to establish new systems of openness and cooperation between nations."<sup>29</sup> In addition, Vannevar Bush, the Director of the United States Office for Scientific Research and Development, wrote a memo to Secretary of War Henry Stimson about the potential for postwar policy issues concerning the atomic bomb. Similar to Bohr, Bush believed the best way to avoid a competitive arms race was to inform Stalin and reestablish an open international community of scientists through an official office in each country.<sup>30</sup> FDR seemed open to these ideas. However, Churchill could not support atomic bomb communication with the Soviet Union. Churchill told Bohr that involving Stalin would not alter the course of the war and that FDR and himself would resolve any issues that arose afterwards.<sup>31</sup>

The United States was planning their own defeat of Japan with little regard to Stalin's interests. This changed at the Yalta conference as Stalin outlined his interest in entering the war with Japan. FDR and Churchill quickly agreed to Stalin's terms and agreed that the Soviet Union would enter the war with Japan within a few months of Germany's surrender. A successful atomic bomb test had not yet taken place. Churchill and FDR still believed they would need the Soviet's support in defeating Japan.<sup>32</sup>

Secretary of War Stimson was tasked with weighing the issues between national security during the war and international diplomacy after the war. In his memoirs Stimson writes that, "all of us, of course, understood the terrible responsibility involved in our attempt to unlock the doors to such a devastating weapon."<sup>33</sup> After analyzing the consequences on both sides Stimson decided in December 1944 that it was not time to tell Stalin and informed FDR of this decision. However,

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<sup>27</sup> *ibid*

<sup>28</sup> Holloway, *Stalin*, p. 121

<sup>29</sup> Robert Oppenheimer, *Uncommon Sense* (Birkhauser Boston: Cambridge, 1984), p. 9

<sup>30</sup> Holloway, *Stalin*, p.119- 120

<sup>31</sup> Holloway, *Stalin*, p.118-119

<sup>32</sup> Holloway, *Stalin*, p.123

<sup>33</sup> Stimson, *On Active*, p. 613

they continued to discuss it right up to their last conversation on March 15, 1945.<sup>34</sup>

FDR agreed that they needed to make a decision and needed to choose how to diplomatically handle the use of the first bomb, perhaps with a well-crafted public announcement.<sup>35</sup>

Throughout the war, **Stalin** was not focused on an atomic bomb project, yet he firmly believed the Soviet Union was doing all they could to reign successful.<sup>36</sup> He recognized that Germany, Japan, and Italy had restructured their economy and poured all their resources into preparing for war. In addition, he felt certain that the Great Depression deeply affected the United States, Britain, and France during the 1930's. As a socialist state that had been building it's military arsenal since the 1920's, Stalin concluded that the Soviet Union was better prepared for war.<sup>37</sup>

However, the fact that they were not working on an atomic bomb project is surprising considering Stalin's focus on using scientific discoveries to strengthen their military. The Soviet government supported the science fields that directly connected to building the nation's industrial or military strength. However, at the time Stalin saw physics as a theoretical field, not a field that produced arms or industry. In addition, during the "Great Purge," in 1936-1938, many scientists were accused of a plot against the state, arrested, and either sent to prison camps or executed. This not only depleted the Soviet Union of many of its leading physicists, it also set a standard that all scientists were to work within strict government regulations or else suffer grave consequences.<sup>38</sup> The physicists remaining after the Great Purge faced increased pressure on producing technological advances for the state; however, the lack of economic support created roadblocks to their success.<sup>39</sup>

In April 1942 Vyacheslav Molotov, second in command to Stalin, received a file containing secret reports on British work. This was the first piece of espionage intelligence

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<sup>34</sup> Stimson, *On Active*, p. 616

<sup>35</sup> *ibid*

<sup>36</sup> Stalin, *Works Vol. 15*

<sup>37</sup> *ibid*

<sup>38</sup> Weissberg, *Accused*, p. 158-160

<sup>39</sup> Holloway, *Stalin*, p. 28

received by the Soviet Union concerning the atomic bomb research in the west. For the first time the possibility of a bomb project was on the consciousness of Soviet leadership.<sup>40</sup> Although it was going to be expensive, Stalin started a small bomb project. He did not think they could finish it by the end of the war but might need it if they were to go to war with the United States and Britain.<sup>41</sup> The prospect of beginning a lengthy and expensive project was not appealing. The Soviet Union was deep into the war and their resources were otherwise occupied with fighting until Hitler surrendered.

The espionage efforts that reached the Soviet physicists in 1943 and '44 initially helped in small ways but the scattered pieces of information left them searching to put the whole picture together.<sup>42</sup> However, Soviet work was transformed in the early part of 1945 due to detailed information from Western physicist, Klaus Fuchs. Fuchs sent consistent reports throughout the spring and summer of 1945 highlighting new information from Los Alamos that eventually convinced the Soviet scientists that a successful bomb was created in the United States.<sup>43</sup>

Despite this information, Stalin still did not take serious action. The Soviet leaders did not believe the intelligence reports. They thought the information was a decoy designed by Hitler to distract them from defeating Germany. In addition, they didn't trust their physicists. Everyone said that the bomb could not be built and now Kurchatov was saying it could. Stalin did not understand physics so without trust he had no other way of knowing who was being honest with him. Despite Fuchs' report, a bomb project was not a reality for the Soviet Union, as they did not yet grasp how the bomb would soon affect international relations.<sup>44</sup>

Harry S. Truman, the Vice President of the United States, was not informed of the atomic bomb project until he became president on April 12<sup>th</sup> upon FDR's death. Secretary of War Henry Stimson and General Groves, who both believed the Soviet Union should not be informed of the

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<sup>40</sup> Holloway, *Soviet*, 17

<sup>41</sup> Holloway, *Stalin*, p.96

<sup>42</sup> Holloway, *Stalin*, p.107

<sup>43</sup> Williams, *Klaus*, pp. 75-80

<sup>44</sup> *ibid*

atomic bomb, briefed Truman. Truman understood the implications and possibilities.

Using the atomic bomb appeared to be the solution to shocking Japan into defeat while also sacrificing the fewest Allied lives.<sup>45</sup>

After confirmation that a completed atomic bomb project would be available by August 1<sup>st</sup>, discussions heightened concerning how to handle the Soviet Union. The Interim Committee was established to analyze the decision to use the atomic bomb and discuss international control of atomic energy. They initially reinforced the decision to use the bomb against Japan without leaking information to anyone other than Churchill.<sup>46</sup> However, two members, Bush and Conant, drafted a proposal for Stimson in September 1944 highlighting the potential for the Soviet Union to build an atomic bomb. The report demonstrated that the Soviet Union would be capable of producing the weapon in a few years. The committee waffled but eventually decided Truman should briefly mention the bomb to Stalin at the Potsdam Conference. They instructed him to state that the United States was working on a bomb and perhaps the two of them could discuss it further as an aid to peace. Truman essentially ignored them.<sup>47</sup>

The first atomic bomb test took place on July 16<sup>th</sup>, while the Potsdam Conference was in progress. On July 24<sup>th</sup> President Truman approached Stalin and “casually mentioned” that “we had a new weapon of unusual destructive force.”<sup>48</sup> Truman later wrote that Stalin “was glad to hear of it and hoped we would make good use of it against the Japanese.”<sup>49</sup> Truman and Churchill were convinced that Stalin had not grasped the President’s reference. They were mistaken. Stalin knew of the Manhattan Project through information retrieved from spies.<sup>50</sup>

The Potsdam conference also revealed strains concerning Stalin’s plans in Eastern Europe. While FDR and Churchill had agreed to Stalin’s terms at Yalta, positive confirmation of an atomic bomb changed the needs of Britain and the United States. They no longer needed Stalin to enter

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<sup>45</sup> Groves, *Now*, p. 230-1

<sup>46</sup> Stimson, *On Active*, p. 617

<sup>47</sup> Holloway, *Stalin* p. 121

<sup>48</sup> Harry S. Truman, *Memoirs Vol. 1 1945, Year of Decisions* (Signet Books: New York, 1965), p. 458

<sup>49</sup> *ibid*

<sup>50</sup> Holloway, *Soviet*, p.15



the war with Japan but they were not willing to tell him why.<sup>51</sup> Stalin wanted to enter the war with Japan in order to gain the terms outlined at Yalta.<sup>52</sup> This was the last meeting between the top three powers and the first time the atomic bomb would be a factor between them. The Soviet leaders finally drew a clear connection between the bomb and foreign policy and knew they were being betrayed.<sup>53</sup> This betrayal built upon Stalin's skepticism of whether the United States was ever an ally of the Soviet Union. He questioned whether the United States had any regard for the Soviet Union's interests.<sup>54</sup>

The United States dropped the bomb on August 6<sup>th</sup> and 9<sup>th</sup> 1945 without fully telling the Soviet Union of their plans. Stalin's impression was that the US and Britain trumped the Soviet Union by gaining Japanese surrender.<sup>55</sup> Stalin was briefed on a report sent immediately from President Truman summarizing the Manhattan Project. Truman stated that starting in 1940 the United States worked with Britain on a plan to build the bomb. Truman also referenced the need to establish an international peace plan in light of this new weapon. Stalin's public reaction was silence. The Soviet Union attacked Japan the next day.<sup>56</sup> The Soviet leaders saw the use of the bomb as an attempt to pressure them.<sup>57</sup> Some Soviets "dismally remarked that Russia's desperately hard victory over Germany was now "as good as wasted."<sup>58</sup> They immediately knew the impact; they knew the power had shifted.

Stimson knew the United States had withheld information in part so that they could move swiftly and attack Japan with surprise but also to further the United States agenda; he feared Stalin knew this and thus feared his reaction.<sup>59</sup> In a memorandum to President Truman on September 11, 1945 Stimson wrote, "We can be certain that the Soviet government has sensed this tendency and the temptation will be strong for the Soviet political and military leaders to acquire this weapon in

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<sup>51</sup> Stimson, *On Active*, p.617

<sup>52</sup> Stalin, *Works Vol. 16*, located at: <http://www.marxists.org/reference/archive/stalin/works/1945/09/02.htm>

<sup>53</sup> Holloway, *Stalin*, p.122

<sup>54</sup> Stalin, "Speech" located at: <http://www.marxists.org/reference/archive/stalin/works/1942/11/06.htm>

<sup>55</sup> S. M. Shtemenko, *The Soviet General Staff at War 1941-1945, Book I* (Progress Publishers: Moscow, 1985), p. 351

<sup>56</sup> Holloway, *Stalin*, p.127

<sup>57</sup> Holloway, *Soviet*, p.19

<sup>58</sup> *ibid*

<sup>59</sup> Stimson, *On Active*, p.642

the shortest time possible.”<sup>60</sup> Soviet security now seemed to be at risk from a new threat and somehow the United States government leaders had underestimated the Soviet Union’s reaction. Stimson realized the motives of the United States were no longer the priority, international security was at stake. He went on to say that the best way to gain someone’s trust was to trust them. However, his very next statement was, “But what if Stalin and his lieutenants were, in this final and essential test of purpose, not different from Hitler?”<sup>61</sup> Despite their lack of trust for the Soviet government, the United States was hoping they could diplomatically navigate postwar policies.

However, the damage was already done. The Soviet Union saw the events in early August 1945 as “a barbaric act undertaken by the United States in defiance of all common sense and military necessity.”<sup>62</sup> Stalin knew the greater implications of the atomic bomb. He told Kurchatov, “Hiroshima has shaken the whole world. The balance has been destroyed.”<sup>63</sup> In a 1946 interview Stalin contended that the greatest threat to world peace was “the instigators of a new war, in the first place Churchill and people of like mind in Britain and the U.S.A.”<sup>64</sup> Due to the secret use of the atomic bomb, Stalin eventually concluded that the United States wanted a monopoly of atomic weapons in order to “have unlimited power to intimidate and blackmail other countries.”<sup>65</sup> He believed the United States needed war in order to support their capitalist society<sup>66</sup> Stalin went on to state that the policy of the Soviet Union on atomic warfare was to prohibit more bombs from being produced and establish an international control over any future use of such a weapon.<sup>67</sup> The Soviet Union tested their first atomic bomb on August 29, 1949.<sup>68</sup>

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<sup>60</sup> Stimson, *On Active*, p. 643

<sup>61</sup> Stimson, *On Active*, p.646

<sup>62</sup> Shtemenko, *Soviet*, p. 351

<sup>63</sup> Holloway, Stalin, p.132

<sup>64</sup> J.V. Stalin, “On Postwar International Relations: Replies to Questions put by Mr. Hugh Baillie, President of the U.P. of America” *Marxist Archive* 10-18-1946, <http://www.marxists.org/reference/archive/stalin/works/1946/10/28.htm>

<sup>65</sup> Joseph V. Stalin, *For the Peaceful Coexistence, Postwar Interviews* (New York: International Publishers, 1951), “Prohibition of Atomic Weapons October 6, 1951”

<sup>66</sup> Stalin, *For*, “When Is War Not Inevitable, February 16, 1951”

<sup>67</sup> Stalin, *For*, “Prohibition”

<sup>68</sup> Stalin, *For*, “Prohibition of Atomic Weapons October 6, 1951”

The policies involved with the end of the war point to two nations that were not working towards the same goals. Scholars see this two different ways. Some see that the United States used the bomb to end the war quickly and effectively in order to restore peace as swiftly as possible. As a secondary motive they see the United States using their secret possession and use of the bomb as a means to wield power over the Soviet Union. The Soviet perspective is that ending the war quickly was, in and of its self, against Soviet interests and possibly directed as such. The Soviet Union wanted to fight the Far East to accomplish their personal objectives and the United States knew that. The assumption is that the United States dropped the bomb without telling Stalin in order to keep the Soviet Union from getting what they wanted.<sup>69</sup>

The research presented in this work demonstrates a combination of those perspectives. The United States did want to end the war quickly and used the bomb to do that, fearing that informing the Soviets would slow that process. The United States also wanted to control postwar diplomacy pertaining to imperial desires of the Soviet Union and they thought they could use the bomb towards that end. The important element to these events is how the Soviet Union viewed the actions of the United States and the adverse reaction those views had on an already tough relationship between the two nations.

Due to the concentration of Western physicists and the ban on fission, the US was in a unique position to isolate their knowledge of the atomic bomb. However, it is possible that the United States could have turned a loose relationship into a strong one if they had used the bomb differently. Stalin's intense reaction to the way the Allies seems to be intimately tied to his negative postwar attitude towards the United States. However, it is possible the atomic bomb's mere existence combined with building tension between the two countries would have created a Cold War atmosphere regardless of how the United States handled the end of WWII. The United States chose to ignore the Western physicists in order to fulfill their own agenda: obtaining the power to use the atomic bomb to negotiate with Stalin on his imperialism, economic, and political

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<sup>69</sup> Nikolai V. Sivachev and Nikolai N. Yakovlev, Russia and the United States (University of Chicago Press: Chicago, 1979), p. 209

policies. The western powers believed they would have the monopoly of the atomic bomb for a long time and would have plenty of opportunities to negotiate with Stalin. The question remains of whether the Soviet Union was justified in their intense reaction to the United States' use of the bomb and whether the Cold War would have existed otherwise. However, with certainty, the United States' act of using the atomic bomb without disclosing plans to the Soviet Union further damaged an already tenuous relationship and opened the door to a distrusting post-war world of atomic bomb competition.