

AUFsätze

JAHRBÜCHER FÜR GESCHICHTE OSTEUROPAS 66, 2018/1, 20–44

DOI 10.25162/JGO-2018-0002

FABIAN LÜSCHER

The Nuclear Spirit of Geneva

Boundary-Crossing Relationships of Soviet Atomic Scientists after 1955*

ABSTRACT: The 1955 UN-sponsored Geneva *Conference on the Peaceful Uses of Atomic Energy* quickly became a symbol for the re-establishment of international scientific cooperation and knowledge-exchange. It was the first large-scale meeting attended by Soviet atomic energy specialists – so called *atomshchiki* – after years of isolation. Starting from this vast gathering, this article examines the limited internationalization of Soviet nuclear science, stressing the importance of personal encounters of and direct contacts between scientists from both sides of the Iron Curtain. Focusing on the role of the Soviet Academy of Sciences as one of the most influential institutions within the creation and negotiation of border-crossing relationships regarding nonmilitary uses of atomic energy, it provides insights into the growing international entanglements of Soviet nuclear research. The establishment of an International Atomic Energy Agency in 1957 marked yet another milestone in this process. One of the Agency's main purposes was to provide a diplomatic platform for the discussion of problems posed by the nuclear age. By analyzing professional contacts of Soviet scientists and science administrators with their Western counterparts, this article shows how they sought acknowledgment both from an international scientific community and from the Party and state authorities. Referring to an atmosphere of mutual understanding experienced during a total of four major atomic energy conferences in Geneva between 1955 and 1971, Soviet *atomshchiki* did much to foster knowledge exchange across the Iron Curtain and to establish channels of communication to the West which remained open even in times of growing political tensions.

Keywords: Soviet Union – UNO – International Conference – Nuclear power – Scientific relations – 1950ies – 1960ies – 1970ies

Introduction

Relationships across the political and ideological boundaries of the Cold War were often shaped by a distinctive combination of competition, conflict and cooperation.¹ This is especially true of science diplomacy around the so-called “peaceful uses” of atomic

* Last updated on 5 December 2017.

1 GESTWA/ROHDEWALD Verflechtungsstudien.

energy.² The late 1950s saw the steady expansion of what was at first a limited exchange of ideas and visits between Soviet scientists and their West European and American counterparts,³ notably thanks to the pacific and productive atmosphere generally felt to have been created by the United Nations *Conferences on the Peaceful Uses of Atomic Energy*. This paper follows Soviet actors through this time of development and institutionalization of international relationships among nuclear scientists. It emphasizes the importance of frequent face-to-face meetings,⁴ arguing that direct contacts with Western peers – even at times of political conflict – were crucial to Soviet scientists not only in maintaining their newly won place in the international scientific community but – more important – in enhancing their position at home. Geneva can thus be seen not only as a site of scientific-technological competition, but also as the birthplace of a transnational network lobbying for nuclear science and technology.⁵ This network allowed scientists, engineers and administrators to discuss non-military atomic energy development across the divide between the blocs, and their consensus on the future role of nuclear power was in turn used to convince policy makers in the Communist Party of the Soviet Union (CPSU) to promote atomic science and its applications.

International relationships in science have long been a topic in the history of sciences and in diplomatic and cultural history. However, while some research has been done on scientists and nuclear disarmament, the contacts, networks and knowledge-exchange around the benign uses of nuclear energy have not yet attracted much attention.⁶ And while there have been several studies of postwar scientific internationalism, most have dealt primarily with scientists living and working in the United States.⁷ Soviet scientists do make an appearance in studies of the institutionalized networks based on international organizations or more informal fora such as the Pugwash Conferences on Science and World Affairs,⁸ but the historiography of Cold War international relations in the sciences remains asymmetrical, and often focused on the West-to-East movement of knowledge, personnel and technology, as Martin Aust pointed out.⁹ Historians of the nuclear age have emphasized the importance of the direct contacts established under

2 I use “science diplomacy” as an umbrella term to designate a range of complex processes involving governments, international organizations, academia and other social actors. For discussion of the concept see FÄHRNICH *Science Diplomacy: Investigating the Perspective of Scholars on Politics-Science Collaboration in International Affairs*; WEISS *How Do Science and Technology Affect International Affairs?*

3 HOLLINGS *Scientific Communication Across the Iron Curtain*, p. 30; RICHMOND *Cultural Exchange and the Cold War*, p. 15.

4 For the importance of face-to-face contact at scientific conferences as means of building trust see KREMENTSOV *International Science Between the World Wars*, p. 6.

5 On the benefits and limitations of transnational perspectives on the history of Soviet science see DAVID-FOX *The Implications of Transnationalism*; further discussion can be found in a recent *Kritika* editorial: *Across and Beyond. Rethinking Transnational History*, in: *Kritika* 17 (2016), 4, pp. 715–720.

6 A notable exception is ORLOVA *Kontakty tret'ej stepeni*.

7 MANZIONE “Amusing and Amazing and Practical and Military”; WUNDERLE *Experten im Kalten Krieg*; HEWLETT/HOLL *Atoms for Peace and War*.

8 EVANGELISTA *Unarmed Forces*; KUBBIG *Kommunikatoren im Kalten Krieg*; ROTBLAT *Pugwash*; EVANGELISTA *Transnational Organizations and the Cold War*; BARTH *Catalysts of Change*. WITTNER *Resisting the Bomb*; KLEIN *Atomic Scientists and Disarmament*.

9 AUST *Russland und die Sowjetunion in der Globalgeschichte*.

the auspices of the Atoms for Peace program, the first Geneva Conference and the International Atomic Energy Agency (IAEA).¹⁰ And in studies of Soviet nuclear history, as in the recollections of Soviet delegates, Geneva is regularly mentioned as playing a key role in Soviet scientists' regaining their place in the international scientific community.¹¹ Nonetheless, while all recent studies of Soviet nuclear history have indicated the importance of East-West networks, little attention has been given to their actual operation. The goal of this article is to show how Soviet *atomshchiki* crossed boundaries between ideological blocs and social fields in pursuing their sometimes conflicting goals – the re-establishment of international community among atomic scientists, the promotion of Soviet nuclear policy on the international stage, and lobbying domestically for further investment in nuclear energy research and development.¹² Here, the crossing of boundaries means not just traveling from one state to another, but also negotiating the differences between the political and scientific spheres and between opposed ideological contexts. Operating in such different areas as science diplomacy, policy advice, public relations and actual research demanded a great deal of flexibility from the scientists and scientific administrators involved.

Exploiting the archives of the Soviet Academy of Sciences and hitherto more-or-less neglected documentation held in the archives of the IAEA in Vienna, this article offers new insights into the history of the Geneva Conferences and the early history of the IAEA.¹³ It seeks to elucidate Soviet scientists' cross-boundary relationships in the context of multiple loyalties: to the Soviet state, the CPSU and the Academy of Sciences, and also to the international community of nuclear scientists, who, despite Cold War conflicts, developed networks that helped to advocate the extensive exploration and use of "peaceful atoms".

For Soviet scientists, participation in the First Geneva Conference was crucial to establishing scientific and personal contacts. As the universal language of the sciences, mathematics was understood on both sides of the Iron Curtain, providing scientists with a unique opportunity to communicate on seemingly neutral ground.¹⁴ Historians of science have long argued against an unproblematic notion of epistemic universal-

10 KRIGE Atoms for Peace, Scientific Internationalism, and Scientific Intelligence; STRASSER La fabrique d'une nouvelle science, pp. 18–30; WUNDERLE Experten im Kalten Krieg, pp. 309–319; BROWN Nuclear Authority. An insider's view on the history of the IAEA is provided by FISCHER History of the International Atomic Energy Agency.

11 ORLOVA Kontakty tret'ej stepeni, pp. 7–8; HOLLOWAY Stalin and the Bomb, pp. 358–363; JOSEPHSON Red Atom, pp. 172–176; SCHMID Producing Power, pp. 13, 97; TIMERBAEV Rossiia i iadernoe neraspostranenie, pp. 80–81; KAZACHKOVSKII Zapiski fizika o voine i mire, pp. 378–384; EMEL'IANOV Atom sha-gaet po stranam, p. 3.

12 See Sonja Schmid's article in this issue.

13 HOLLOWAY The Soviet Union and the Creation of the International Atomic Energy Agency focuses on Soviet debate about the process, the account thus ending with its establishment; this article will look more at the early years of the Agency's existence.

14 As the author of a report in the *American Scientist* put it, "The Conference established that, at least in a limited area, it is possible to overcome formidable language barriers and political precedents. We realize more sharply than ever before that neutrons create the same problems in every country": CHARPIE The Geneva Conference, p. 33.

ism,¹⁵ but as Geert J. Somsen has convincingly pointed out, “while the reality of scientific universalism has been rejected, there has been no denial of its power as self-representation. Science may not be inherently universal, but scientists have often viewed their enterprise in such terms.”¹⁶

Soviet scientists seeking the re-establishment of international community with their Western peers needed a certain gymnastic skill, “supporting integration into the international atomic community, backing broad international cooperation and – at the same time – enabling the demonstration of Soviet scientific-technical superiority.”¹⁷ Loyalty to the CPSU was essential. After all, it was the party elite who decided who could travel to conferences and whose opinion was considered in policy-making, resource allocation and so on.¹⁸

Especially when addressing an international audience, scientists had to present the Soviet path to a nuclear-powered future as the joint endeavor of politicians and scientists,¹⁹ Soviet nuclear science and technology policy as the fruit of the unanimous accord of Party, state and science.²⁰ Discussing nuclear science and technology in the United States, where nuclear know-how was spread over a complex cluster of administrations, research labs and private-sector engineering companies, one of the chief proponents of nuclear internationalism within the USSR declared that “when the [Soviet] government signs an agreement, no more questions arise: we have just one company – the USSR.”²¹

The article first explores the fundamental consensus on cooperation in nuclear science that the First Geneva Conference did much to establish, what I call the “nuclear spirit of Geneva”, in echo of the phrase famously used to evoke the positive atmosphere of the Geneva Summit of July 1955.²² Three aspects of this tacit consensus were particu-

15 See for example SCHROEDER-GUDEHUS *Les Congrès Scientifiques et la Politique de Coopération Internationale des Académies des Sciences*; SHAPIN *Here and Everywhere: Sociology of Scientific Knowledge*; CRAWFORD *Nationalism and Internationalism in Science, 1880–1939*, p. 1.

16 SOMSEN *A History of Universalism*, p. 362.

17 ORLOVA *Kontakty tret'ej stepeni*, p. 6.

18 In analyzing the international contacts of Soviet geneticists in the interwar period, Nikolai Kremontsov emphasized the idea of dual loyalty, in doing so recycling the much older idea of scientists' overlapping loyalties to both state and scientific community. This paper claims that multifarious flexible loyalties were a central aspect of the Soviet involvement in early nuclear internationalism, applying Kremontsov's assumptions to the case at hand. See KREMENTSOV *International Science between the World Wars*.

19 In doing this, the *atomshchiki* were adhering to the Soviet conception of a directly applicable science that served the economic and social needs defined by the Party. In the 1990s some authors claimed that scientific subservience to the state and the Communist Party became the norm in the Soviet Union: CRAWFORD/SHINN/SÖRLIN *An Introductory Essay*; for a more nuanced account of the particularity of Soviet science and its supposed identity of goals between regime and research see: KOJEVNIKOV *The Phenomenon of Soviet Science*; KOJEVNIKOV *Die Mobilmachung der sowjetischen Wissenschaft*.

20 The notion that “science is communism”, that these “shared their most important values: the relief of human misery, transcendence of nation and class, progressivism, internationalism”, was popular among communist scientists inside and outside the USSR. See: SOMSEN *A History of Universalism*, p. 369.

21 Vasilii S. Emel'ianov reports having said this to Admiral Hyman Rickover in Moscow, in 1959, during initial negotiations on the exchange of scientific information: EMEL'IANOV *Atom shagaet po stranam*, p. 23.

22 In July 1955, the first summit meeting of the world's leading powers since the 1945 Potsdam conference was held in Geneva, and the “Spirit of Geneva” became a popular shorthand for the atmosphere of dialogue and mutual understanding that prevailed. When the atomic scientists' conference opened two weeks later,

larly important: 1) The desirability of knowledge-exchange around possible uses of nuclear energy and radioactive isotopes; 2) a shared perception of science as a linear process leading to further understanding, description and subjugation of nature; 3) the conception of a clear boundary between nuclear bombs and nuclear power stations, the first being the object of inter-bloc political contention, the other not.

Examination of direct contacts and institutionalized relations across the Iron Curtain reveals the interplay of cooperation, competition and conflict in the field of benign nuclear energy. By following Soviet atomic scientists to international institutions, conferences and meetings – from the first to the fourth and last of the *Geneva Conferences on the Peaceful Uses of Atomic Energy* – this article shows how multiple allegiances and different ways of boundary-making came into play in navigating the troubled waters of the Cold War and lobbying for atomic power as the most promising next-generation technology.²³

The Spirit of Geneva

The year 1955 marked a significant turning point in Soviet science policy. The cloak of secrecy that had hitherto covered everything related to the uses of nuclear energy would finally be gradually lifted. Of course, most of the Soviet atomic program would remain a top-secret affair. But with the achievement of a balance of terror in nuclear weapons in 1953, there was little left to fear, at least in terms of fundamental scientific discoveries leading to new kinds of nuclear explosive. It became clear to the Soviet authorities that the exchange of ideas in the field of civilian atomic energy could be markedly beneficial, if tightly regulated and strictly monitored.²⁴ Still, the unveiling of Soviet nuclear science had to be carefully planned. In January 1955, Foreign Minister Viacheslav M. Molotov (1890–1986) and Minister for Medium Machine Building Viacheslav A. Malyshev (1902–1957) – responsible for the heavily disguised ministry for atomic research and development, henceforward referred to as MSM – drafted a note for the attention of the Central Committee of the CPSU, in which they referred to the UN General Assembly's decision to convene an international conference on the uses of atomic energy.²⁵ Malyshev and Molotov interpreted the call for this conference as an attempt by the United States to obtain information about worldwide nuclear fuel reserves and possible buyers

it was intended that this spirit of mutual understanding be manifested in the context of scientific-technological cooperation.

- 23 The term “boundary-making” here refers to practices and methods of drawing boundaries between science and politics in order to support the legitimacy of scientific claims regardless of their political embeddedness: JASANOFF *The Fifth Branch*, pp. 229–249.
- 24 The General Directorate for the Protection of State Secrets in the Press (Glavlit) compiled lists of information prohibited from publication in 1949, 1958, 1976 and 1990. These documents offer a vivid illustration of how the Soviet state regulated and controlled the circulation of nuclear scientific-technological knowledge. See for example: Perechen' svedenii, zapreshchennykh k opublikovaniuu v otkrytoi pechati, peredachakh po radio i teledeniuiu. Moskva: Glavlit, 1976, p. 35.
- 25 AFIANI *Akademiia nauk v resheniiach TsK KPSS, 1952–1958*, Doc. 45, pp. 203–205.

for American nuclear technology. They therefore pointed out that the most important thing for Soviet participants would be to release not too much information, limiting contributions to facts more or less well-known in scientific circles. As heads of their respective ministries, they also proposed adding two items to the provisional agenda of the conference: a paper on the Obninsk power plant, which had been connected to a local grid near Moscow in 1954, and a discussion of aid for nuclear development. The paper on the world's first nuclear power plant would direct public attention to unproblematic aspects of the Soviet atomic program, while discussion of the global dissemination of benign nuclear technology would beneficially highlight "unconditional Soviet support" for the development of nuclear power programs in "other countries".

Once the decision had been taken to send a Soviet delegation to the conference, preparations began in earnest. On the initiative of Igor' V. Kurchatov (1903–1960), scientific head of the Soviet atomic program, the Soviet Academy of Sciences sponsored a hastily organized international meeting in Moscow, so as to prepare its delegates for the big event in Geneva.²⁶ One of the highlights of this *ad hoc* encounter was a visit to the Obninsk power plant.²⁷ A model of this facility would later be presented in the exhibition hall in Geneva, in accordance with the recommendations of the MSM and the Foreign Ministry.

When nuclear scientists from all over the world met in Geneva in 1955 to discuss "the technology on which all depends", expectations were extremely high.²⁸ For scientists and engineers working on the Soviet atomic program, Geneva offered the first major opportunity to present their achievements to fellow scientists and to the wider international public. There had by then been no international gathering of atomic scientists for more than 20 years, not least because of the obvious military significance of their research.²⁹

Geneva, of course, was expected to allow the pooling of knowledge about nuclear fission, but it also offered a platform for the display of scientific achievements, thereby bolstering the claims of the Soviet path to nuclear-powered modernity. The opportunity to share nuclear success-stories was greatly appreciated, even if Party-imposed secrecy laid down strict limits on what could be disclosed. The Presidium of the Central Committee of the CPSU warned the scientists chosen to travel to Switzerland:

26 HOLLOWAY *Stalin and the Bomb*, p. 352; AFIANI *Akademiia nauk v resheniiax TsK KPSS, 1952–1958*, Doc. 72, pp. 276–280.

27 ICHIKAWA *Obninsk, 1955*, pp. 33–38; on the Obninsk power plant's career as a "showcase of Soviet scientific-technical superiority" see: ORLOVA *Kontakty tret'ej stepeni*, p. 5.

28 It was John Cockroft (1897–1967), head of the UK delegation, who called the production of power through the harnessing of atomic energy the "technology on which all depends" in his evening lecture at the first Geneva Conference: COCKROFT *The Future of Atomic Energy*, p. 285.

29 KRIGE *Atoms for Peace, Scientific Internationalism, and Scientific Intelligence*, pp. 174–180; SCHROEDER-GUDEHUS *Probing the Master Narrative of Scientific Internationalism*, pp. 30–32; STRASSER *La fabrique d'une nouvelle science*, p. 19.

“The delegates of the USSR need to keep in mind that foreign participants at the conference may make attempts to gain information about the uses of atomic energy in the USSR [...] that falls into the secret category.”³⁰

Besides showcasing their achievements in nuclear science without giving away too much, members of the Soviet delegation to Geneva were instructed to establish direct contacts with foreign scientists – especially with delegates from the most advanced nuclear states, the USA and the UK. In this, conversations at informal gatherings outside the conference agenda would play an important role, allowing a more free-wheeling exchange.³¹ Directives on how to write scientific reports on Geneva emphasized the importance of such informal discussions:

“It will be necessary to clarify the following questions: [...] What new information is provided by other participants in papers and displays or in answer to questions, or in the course of personal conversation or visits to scientific institutions?”³²

The same document specified that delegates’ reports should indicate those fields in which the Soviet Union’s scientific achievements outstripped those of other countries and those fields in which the USSR lagged behind. The contacts established in Geneva were evidently valued not only as prerequisites for possible cooperation but also as means to locate Soviet nuclear science within the global research landscape.³³

The Soviet delegation was larger than many others and led by a number of eminent scientists, several of them members or corresponding members of the Academy of Sciences.³⁴ Their contributions were appreciated by foreign colleagues, for “even if the content was not scientifically riveting [...] it lifted the veil of secrecy from [...] reactor programs [...] in the Soviet Union”³⁵ Clearly, participation in this vast conference paid off for the Soviet scientists, who had finally regained their place and reputation within the larger community.³⁶ Laura Fermi (1907–1977), enthusiastic chronicler of the conference, gave a colorful account of the atmosphere in Geneva: “In the Palais des Nations there was no East or West, there was no ‘curtain’, no totalitarian states, no democracies –

30 AFIANI *Akademiia nauk v resheniiah TsK KPSS, 1952–1958*, Doc. 89, p. 316. Similar instructions for trips abroad had been integral to Soviet Science policy since at least the 1940s. On this see: KREMENTSOV *Sovetskaia nauka na poroge kholodnoi voiny*, p. 288.

31 KAZACHKOVSKII *Zapiski fizika o voine i mire* pp. 379–380.

32 ARAN, f. 1522, op. 1, d. 81 (*Materialy k Mezhdunarodnoi konferentsii v g. Zheneve po mirnomu ispol'zovaniiu atomnoi energii*, 24 February 1955 – 27 February 1955), l. 36.

33 An assessment of the Soviet Union’s standing in non-military nuclear science and technology was given to the Presidium of the Academy of Sciences after the conference. See: ARAN, f. 2, op. 6, d. 201 (*Stenogramma Zasedaniia Prezidiuma Akademii nauk Sojuza SSR*, 30 September 1955), l. 111–113.

34 List of Officers, Delegations and Conference Secretariat, in: *Record of the Conference*, pp. 133–145. In 1955, the Academy was the obvious institution to represent Soviet nuclear science. The MSM was strictly secret and the State Committee for Nuclear Affairs had not yet been established.

35 KRIGE *Atoms for Peace, Scientific Internationalism, and Scientific Intelligence*, p. 166.

36 JOSEPHSON *Red Atom*, pp. 20–21.

only men eager to learn or to disclose what they had learned.”³⁷ Fermi’s report is but one example of the exaltedly positive way in which this scientific meeting was presented to the public.³⁸ The First Geneva Conference was certainly a sweeping success in terms of mass media coverage. Newspapers and radio stations all over the world reported on inventions and ideas that would soon change human life entirely.³⁹ Coupled with the vast amount of technical data newly made available, the mere fact of a meeting between Soviet and American delegations evoked hopes that the two emerging superpowers were finally finding common ground and turning to cooperation instead of conflict.⁴⁰

The two sides were certainly both keen to give institutional form to this new climate of exchange and mutual understanding. Proposed two years earlier by American president Dwight D. Eisenhower (1890–1969), in his famous *Atoms for Peace* speech to the UN General Assembly, the idea of an international atomic energy agency gained momentum in 1955.⁴¹ While the Soviet Union had already formally agreed to join negotiations over the IAEA statute on 18 July,⁴² experience at the Geneva Conference amplified Soviet interest in Eisenhower’s project. Reports back on the Conference enthusiastically supported further cooperation in the realm of the peaceful atom, assuring Soviet policy makers that Soviet science could and should play a crucial role in the internationalization of nuclear science.⁴³

In February 1956, not long after the First Geneva Conference had closed and the decision was taken that the USSR should participate in the IAEA, the CPSU held its 20th Congress, best remembered for the “secret speech” of First Secretary Nikita S. Khrush-

37 FERMI *Atoms for the World*, p. 3; Laura Fermi was the wife of the famous émigré physicist Enrico Fermi (1901–1954).

38 For another example, see Vladimir Veksler’s report for Czech radio cited in: WUNDERLE *Experten im Kalten Krieg*, pp. 319–321.

39 The press response to the Soviet presence at the Geneva Conference was monitored by the different embassies and reported to Moscow. See for example: ARAN, f. 1522, op. 1, d. 82 (*Perepiska s Ministerstvom inostrannykh del SSSR po otklikam angliiskoi pressy na rabotu Mezhdunarodnoi konferentsii po ispol’zovaniiu atomnoi energii v mirnykh celiakh*, 29. August 1955), l. 1; *Pravda* offered a daily report from the Conference under the heading *Mezhdunarodnaia konferentsiia po mirnomu ispol’zovaniiu atomnoi energii*. Amongst the coverage of the Conference by the widely-circulated *Literaturnaja Gazeta* were reports by the Polish journalist Karol Malcużyński (1922–1984), well known for his accounts on the Nuremberg trials. For coverage in the popular scientific journal *Ogonek* see: SCHMID *Shaping the Soviet Experience of the Atomic Age*, pp. 29–33.

40 The Academy of Sciences was responsible for the translation of the thousand or so papers into Russian, and all the papers would be published by the UN. On this see ARAN, f. 2, op. 6, d. 201 (*Stenogramma Zasedaniia Prezidiuma Akademii nauk Soiuzu SSR*, 30 September 1955), l. 118.

41 DWIGHT D. EISENHOWER *Address Before the General Assembly of the United Nations on Peaceful Uses of Atomic Energy*, <http://www.presidency.ucsb.edu/ws/?pid=9774> (16.12.2017). For an analysis of the intentions behind “Atoms for Peace” see: OSGOOD *Total Cold War*, pp. 153–180; CHERNUS *Eisenhower’s Atoms for Peace*; DROGAN *The Nuclear Imperative*; and KRIGE *Atoms for Peace, Scientific Internationalism, and Scientific Intelligence*.

42 For a detailed account of the debates about Soviet involvement in the process of founding the Agency see: HOLLOWAY *The Soviet Union and the Creation of the International Atomic Energy Agency*, pp. 8–11; see also: FISCHER *History of the International Atomic Energy Agency*, pp. 29–34.

43 See for example Aleksandr Topchiev’s insistent demand for expanded cooperation in his report on the First Geneva Conference: ARAN, f. 694, op. 1, d. 101 (*Pervaia mezhdunarodnaia konferentsiia po mirnomu ispol’zovaniiu atomnoi energii. Lektsiia v Dome uchenykh*), l. 1–47.

chev (1894–1971), in which he criticized the cult of personality around Stalin, thereby giving new impetus to the process of destalinization.⁴⁴ At this same Congress, two top-ranking scientists – Aleksandr N. Nesmeianov (1899–1980), president of the Academy of Sciences, and Igor’ V. Kurchatov, head of the atomic program – were invited to speak to the assembled Party elite. Kurchatov spoke of the promising prospects for the use of atomic energy for peaceful purposes, noted the great impression made by the Soviet delegation in Geneva, identified some of the most important upcoming tasks of the Soviet Union’s civilian atomic program and finally highlighted the necessity of contacts with Western nuclear scientists:

“We, the Soviet scientists, would like to work on the resolution of this most important scientific problem for mankind together with scientists from all the countries in the world, including scientists of America, whose scientific and technical achievements we highly value.”⁴⁵

As regards nuclear science and technology, the message of the 6th Five Year Plan adopted at the Congress was clear: nuclear applications – in power generation first and foremost – were to be expanded as quickly as possible. In this context, the networks newly established with scientific communities outside the USSR were – in the words of one of the vice-presidents of the Academy of Sciences – to “guarantee the maximal appropriation of domestic and foreign technology”.⁴⁶ Following the 20th Congress, Kurchatov, who had not formed part of the delegation to Geneva, gave further evidence of Soviet scientists’ commitment to international cooperation on what was his first ever trip abroad. For when Khrushchev traveled to England in April 1956, he was accompanied not only by Soviet prime minister Nikolai A. Bulganin (1895–1975) but also by Kurchatov and by aircraft designer Andrei N. Tupolev (1888–1972). The presence of these two eminent representatives of the Soviet scientific-technical elite on the state visit highlights the powerful position occupied by scientists and engineers in the hierarchy of the Soviet system.

When Kurchatov visited the British Atomic Energy Authority’s main research facility at Harwell, he gave a speech in which he openly discussed current problems and questions in the field of controlled nuclear fusion.⁴⁷ In doing so, he broke new ground, as this was a field of research shrouded in the strictest secrecy not only by the Soviet Union, but also by the Western nuclear powers. Kurchatov’s revelations at Harwell prompted Great Britain and the United States to declassify parts of their own nuclear fusion programs, thus opening up a new and highly dynamic field of nuclear research for exchange, cooperation and, not least, competition.

44 On the history of the Secret Speech see: MERL *Entstalinisierung, Reformen und Wettlauf*, pp. 278–279.

45 Rech’ tovarishcha I. V. Kurchatova, in: *Pravda* 53 (22.02.1956), p. 7.

46 ARAN, f. 694, op. 1, d. 109 (*Zadachi AN SSSR v svete reshenii XX s’ezda KPSS. Doklad na aktive v Leningrade*), l. 6.

47 KURCHATOV *The Possibility of Producing Thermonuclear Reactions in a Gaseous Discharge*; see also: SCHMID *Producing Power*, p. 101.

Soviet and International Nuclear Science

Not long before Kurchatov set off for England in March 1956, the Chief Administration for the Use of Atomic Energy (Glavatom) was established as part of the MSM.⁴⁸ The decision to participate in international scientific networks and institutions had made it necessary to make a tiny part of the huge and carefully hidden nuclear administration visible. Glavatom would be the Atomic Ministry's window on the world and ostensibly the USSR's official authority in matters of foreign relations in the field of atomic energy.⁴⁹ Its first head was Efim P. Slavskii (1898–1991), who later became Minister of Medium Machine Building, occupying this position of great influence until after the Chernobyl accident in 1986. His successor as Glavatom chairman was Vasilii S. Emel'ianov (1901–1988), a metallurgist and former chair of the State Committee of Standardization. Before his appointment, Emel'ianov had worked for almost ten years on the Soviet bomb project and was very well acquainted with the highest echelons of his country's scientific community. He had been a member of his country's delegation to the first Geneva Conference in 1955 and took part in the negotiations about the proposed atomic energy agency in New York the following year.⁵⁰ In the fall of 1957, he led the Soviet delegation to the first General Conference of the newly founded IAEA in Vienna, the subject of a detailed report drawn up by the Foreign Ministry.⁵¹ The Soviet delegates presented their own nuclear program as entirely pacific in its ambitions and dedicated to international cooperation, while constantly proclaiming the unity of Soviet science, the Soviet state and the Communist Party. At the start of the conference, Emel'ianov read out a message from Kliment E. Voroshilov (1881–1969), Chairman of the Presidium of the Supreme Soviet of the USSR.⁵² Voroshilov emphasized that the USSR was eager to help all mankind make use of the benign atom – not least through the powers and instruments offered by the new agency. At the same time, he expressed his expectation that the IAEA would help in taking serious steps towards nuclear disarmament. According to the Foreign Ministry report, Voroshilov's message was met with great satisfaction

48 Glavatom was replaced by the State Committee for the Use of Atomic Energy (GKAE) in 1960, which would be reintegrated into MSM only in 1965, see: SCHMID Celebrating Tomorrow Today, p. 346.

49 SCHMID Producing Power, pp. 50–51; VASILIEVA Soleils rouges, pp. 178–179.

50 In 1957 Emel'ianov was not only the head of Glavatom, but also represented the Soviet Union in the preparatory commission for the first General Conference of the IAEA. As member of the Board of Governors of the IAEA, and later as one of the seven specialists on the agency's Scientific Advisory Committee, he was a key player in the newly established institution and certainly occupied one of the most important positions in Soviet nuclear science diplomacy. With his contacts with both the Soviet state administration and the scientific community – he was a corresponding member of the Academy of Sciences and a veteran of the Soviet atomic bomb project – and with his fast growing network of scientists and science policy makers all over the world, it would not be wrong to call him the ambassador-at-large for Soviet nuclear policy during this period.

51 ARAN f. 1522, op. 1, d. 170 (Spravka o pervoi sessii general'noi konferentsii mezhdunarodnogo agentstva po atomnoi energii).

52 From 1953 to 1960 Voroshilov was chairman of the Presidium of the Supreme Soviet of the USSR and *de jure* head of the Soviet state.

by the audience.⁵³ It was no accident that he raised the question of disarmament: the USSR was insistent that only a complete ban of all kinds of nuclear weapons could end the deadlock in the nuclear arms race, a position that Emel'ianov and others constantly sought to promote at the agency's meetings and conferences, where the world's leading nuclear diplomats were present.⁵⁴

The promotion of the Soviet Union's official nuclear policy – complete nuclear disarmament and unconditional readiness to help other states develop their own atomic energy program – had several aims. One, of course, was to discredit the nuclear stances of the two western atomic powers. Another was to align the USSR with the developing countries and in doing so to display the superiority of the Soviet path to modernization.⁵⁵ At the same time, the benefits provided by Soviet ties to the re-established international nuclear-scientific community were by no means to be jeopardized. The task of Soviet delegations to international meetings was therefore not easy, in that they had both to show the existence of a coherent scientific-political system in the Soviet Union and argue at the same time that there was a major divergence of interest between state and science in the countries of the West. While cooperation with scientific institutions from Harwell to Berkeley was of great importance, drawing clear boundary lines between East and West was a political prerequisite in the Cold War context.

In describing other delegations' attitude to the Soviet Union's atomic endeavors, the Foreign Ministry authors are consistently positive:

“The Soviet delegation's declaration of the USSR's readiness to extend every kind of cooperation in the field of the peaceful utilization of atomic energy was received with great satisfaction by all conference participants.”⁵⁶

They noted too that the General Secretary of the Conference, the Swiss diplomat Paul Jolles (1919–2000) had stressed the importance of cooperation between the big nuclear powers – the USSR, the United States and Great Britain.⁵⁷ Given this, Soviet interests would have to be taken into consideration if an effective international agency was to be developed.

For the Foreign Ministry, then, the first IAEA General Conference had been an overwhelming success for the Soviet Union. Yet certain lines of conflict had already appeared. The United States, according to the ministry's observers, were only interested in

53 ARAN f. 1522, op. 1, d. 170, l. 3.

54 The claim took on greater substance with the USSR's announcement of its unilateral test ban in late March 1958. See, for example, Emel'ianov's statement at the IAEA Board on 28 April 1958: IAEA Archives, Box 33001, GOV/OR. 60: Official Record of the Sixtieth Meeting of the Board of Governors, 28 April 1958, pp. 20–23.

55 See: HOLLOWAY *The Soviet Union and the Creation of the International Atomic Energy Agency*, p. 14; ROEHLICH *The Cold War, the Developing World, and the Creation of the International Atomic Energy Agency (IAEA), 1953–1957*, pp. 195–212.

56 ARAN, f. 1522, op. 1, d. 170 (Spravka o pervoi sessii general'noi konferentsii mezhdunarodnogo agentstva po atomnoi energii), l. 51.

57 ARAN, f. 1522, op. 1, d. 170 (Spravka o pervoi sessii general'noi konferentsii mezhdunarodnogo agentstva po atomnoi energii), l. 52.

using – abusing – the agency as a means of controlling fissile resources. Establishing a safeguards regime to prevent the further proliferation of nuclear arms was indeed one of the chief US concerns in Vienna. For the Soviets, this US insistence on controls and inspections was an expression of a drive by the United States to achieve nothing less than “atomic colonialism”.⁵⁸ Quickly adopted into Soviet parlance, the term reflects the policy of alignment with the developing countries, since the fear of “atomic colonialism” was repeatedly expressed by the Indian delegates, the leading spokesmen for the developing world.⁵⁹

Despite the existence of strong disagreements at the political level, scientific and personal contacts between the world’s leading nuclear scientists intensified markedly during the second half of the 1950s. The success of the First Geneva Conference, the declassification of non-military research on nuclear fusion and not least the creation of the IAEA catalyzed this process of networking and especially the cross-border flow of scientific knowledge and personnel. On 16 January 1958, for example, Emel’ianov submitted an offer to the IAEA that included 25 full stipends for students from developing countries.⁶⁰ By the end of February that same year, eight IAEA member states in total had made similar offers to encourage the training of specialists abroad.⁶¹

Three years after the first UN-sponsored conference had marked the dawn of nuclear internationalism, another major conference on the peaceful uses of atomic energy was held in Geneva. In the intervening period, a number of major scientific-technological achievements had been registered. In October 1957, for example, the Soviet Union had won the first stage of the space race by launching the world’s first artificial satellite, Sputnik 1, into the orbit. This victory in competition against the US space program boosted the reputation of the Soviet scientific-technological system and of its personnel.⁶² Not least due to this success, the Soviet delegation met with greatest respect at the Second Geneva Conference.

At the 1958 conference, euphoria about the potential of atomic energy reached new heights. Several papers were devoted to the seemingly unlimited applications of nuclear technology in fields ranging from transportation to medicine, from agriculture to metallurgy. The prospects of a radiant future powered by the peaceful atom were discussed at length at both official and unofficial meetings. Once more, a huge exhibition was installed next to the Palais des Nations where the conference was held. One of the attractions of the Soviet display was a model of the nuclear-powered icebreaker *Lenin*.

58 ARAN, f. 1522, op. 1, d. 170 (Spravka o pervoi sessii general’noi konferentsii mezhdunarodnogo agentstva po atomnoi energii), l. 52.

59 ROEHLICH *The Cold War, the Developing World, and the Creation of the International Atomic Energy Agency (IAEA)*, 1953–1957, p. 15.

60 IAEA Archives, Box 33027, GOV/89: Letter addressed to the Director General by the Governor from the Union of Soviet Socialist Republics, 16 January 1958, p. 1.

61 IAEA Archives, Box 33027, GOV/113: Second Report by the Director General under Rule 8 (a) of the Provisional Rules of Procedure, p. 9. In April 1958 a fellowship program including Soviet fellowships was initiated under the auspices of the agency: IAEA Archives, Box 33028, GOV/351: Annual Report of the Board of Governors to the General Conference covering the period 1 July 1958 to 30 June 1959, pp. 52–58.

62 RICHERS *Welt-Raum. Die Sowjetunion im Orbit*.

This new flagship of the Arctic fleet was an embodiment of the Soviet narrative about the USSR's atomic program, symbolically representing the peaceful intentions of Soviet ship-reactor design, offering a promising example of what atomic energy could mean for the transport, and standing as another atomic first, pressing the American scientific community to keep up with the Soviet pace. Above all, the *Lenin* was an ideal propaganda tool. Allegedly coined by Khrushchev, the slogan “*Lenin* breaks the ice of the Cold War” was repeated over and over again in speeches, newspaper reports, etc.⁶³ Announced for 1959, the atomic icebreaker was much closer to completion than the *Savannah*, the United States' own nuclear-powered civilian surface ship. Supposedly, certain American nuclear scientists admitted in Geneva that the United States' decision to build a nuclear merchant vessel had been merely political, in order to keep up with the Soviet Union in peaceful nuclear technology.⁶⁴ It could be said, then, that the US atomic industry was actually forced to build the *Savannah* by the propaganda success of the *Lenin*.

In their memoirs, members of the 1958 Soviet delegation remember the atmosphere at Geneva, as did their predecessors at the 1955 conference, as generally friendly and highly productive.⁶⁵ Yet the effects of the then virulent Cold War conflict, heightened by events in Lebanon and Iraq, were felt even in the seemingly apolitical, rational atmosphere of scientific meetings. The CPSU took a special interest in the outcome of the conference and so invited academician Alexander V. Topchiev (1907–1962) to give a twenty-minute report to the Central Committee.⁶⁶ A month after it ended, Topchiev assured party leaders of the strong impression his delegation had made. He emphasized, too, the political implications of the conference, speaking in the terms expected. The peaceful uses of atomic energy, he said, had long ago become an “arena of competition between capitalism and socialism.”⁶⁷ This had been taken into account in the delegation's preparatory work and again at the conference itself. After this reassuring introductory statement, Topchiev went on to summarize the most important sessions of the conference, emphasizing the Soviet achievements in each case.

The years between the first and the second Geneva Conferences are surely to be seen as the first heyday of postwar nuclear internationalism. On the one hand, scientific cooperation was boosted by the increasing number of international conferences and the establishment of the IAEA. Announcements of impressive findings in the field of nuclear energy and the evident will to bridge the gap between the two emerging superpowers through exchange of scientific knowledge were given prominence in newspapers and magazines.⁶⁸ Large parts of the political and scientific establishments of the Soviet Un-

63 See for example: CHERNOUS'KO Flagman sokrushaet l'dy, p. 13; DENISOV/VVEDENSKII Prazdnik v Lenigrade, p. 3; BOBROV Atomnyi bogatyr' sozdan vsei stranoi. The catchphrase even featured in a poem by Vasilii A. Zhuravlev (1941–1996) published in Ogonek (1959), Nr. 46, inside cover.

64 ARAN, f. 694, op. 1, d. 193 (O zhenevskoi konferentsii. Vystuplenie v TsK KPSS) l. 10.

65 See: FEDOROV 15 dnei v Zheneve; SAGDEEV The Making of a Soviet Scientist.

66 ARAN, f. 694, op. 1, d. 193 (O zhenevskoi konferentsii. Vystuplenie v TsK KPSS).

67 ARAN, f. 694, op. 1, d. 193 (O zhenevskoi konferentsii. Vystuplenie v TsK KPSS), l. 2.

68 In December 1955 the Presidium of the CC of the CPSU decided to launch the journal *Atomnaia Energiia* (Atomic Energy), which served as an important channel for presenting Soviet achievements to the international community. Starting in 1956, the journal was published every two months by Atomizdat in Mos-

ion and the United States clearly shared a belief in the benefits of scientific progress, but euphoria about the possibilities opened up by this seemingly unlimited source of energy was just one side of the coin. Nuclear internationalism was not just about cooperation, and all involved were well aware of this. The presentation of scientific-technological achievements and notably the achievement of peaceful atomic firsts – such as the construction of the Obninsk nuclear power station or the icebreaker *Lenin* – were of great propaganda value in the ideological conflict between East and West. Even Dmitrii I. Blokhintsev (1908–1979), head of the nuclear research center in Obninsk, openly discussed the political implications of the first nuclear power station: “We, the Soviet people, and the scientists and engineers especially, are glad that the first nuclear power station was brought into service in our country. [...] I am speaking of its political significance, of propaganda. I do not fear the word. [...] A good idea needs to be propagated.”⁶⁹ Such technological achievements helped shape the image of the Soviet Union abroad and were used to impress policy makers in the Third World.⁷⁰ But even against a background of ideological conflict and propaganda, the prevailing spirit of collaborative discussion of the promises and dangers of the nuclear age enabled scientists on both sides of the Iron Curtain to establish and maintain direct contacts based in great part on mutual trust and belief in the universalism of scientific progress.

Direct Contacts

“At the conference in Geneva, in the fall of 1955, scientists from the USSR for the first time met specialists from the USA. Some of us knew of each other through published work, but we had never yet met. [...] Later that same year, after the conference, I visited the USA for the first time, joining the Soviet delegation as an expert on atomic questions. In the USA, there are two currents: a cold one, coming from the governmental sphere, and a warm one – from scientific circles.”⁷¹

In his memoir published eleven years after the first Geneva conference, Emel’ianov drew a clear boundary between science and politics. On this basis, the professional net-

work, then translated into English and reprinted in New York. The journal was intended to provide a steady flow of nuclear news between the blocs and at the same time demonstrate the peaceful intentions of the Soviet Union’s nuclear program: AFIANI Akademiia nauk v resheniiach TsK KPSS, 1952–1958, Doc. Nr. 103 (Postanovlenie Prezidiuma CK KPSS ob izdanii zhurnala “Atomnaia energiia”), pp. 360–361. Two years later, the American Institute of Physics included the influential *Uspekhi fizicheskikh nauk* in their journal translation program.

69 BLOKHINTSEV Novaya era v razvitii nauki, cited in ORLOVA Kontakty tret’ei stepeni, p. 9.

70 Competition for the allegiance of developing countries also occurred in IAEA policy discussions and through the provision of fuel and technology to countries eager to start their own atomic programs. See: ROEHLICH The Cold War, the Developing World, and the Creation of the International Atomic Energy Agency (IAEA), 1953–1957. On the social meaning and symbolism of technological artifacts, see for example PFAFFENBERGER Social Anthropology of Technology.

71 EMEL’IANOV Atom shagaet po stranam, pp. 3–4.

works established around “Atoms for Peace” were seen as unproblematically traversing the boundary between systems, ideological conflict being confined to the inimical and disagreeable sphere of US politics. Correspondence between Emel’ianov and one of his American peers shows how contacts with representatives of what he called the “warm current” helped to maintain communications across the divide even at times of political conflict.

Emel’ianov met Samuel Goudsmit (1902–1978) at a reception at the well-known Waldorf-Astoria Hotel in New York.⁷² By then, Goudsmit, who had come to the United States from the Netherlands before the Second World War and who later participated in the Alsos Mission,⁷³ was editor of the highly reputed *Physical Review*.⁷⁴ He took Emel’ianov to the Brookhaven National Laboratories, where he showed his Soviet guest around and told him, among other things, that some 40 scientists at Brookhaven had started to learn Russian so as to understand relevant papers written in the Soviet Union.⁷⁵ After this first meeting, Emel’ianov’s involvement in the founding of the IAEA necessitated regular visits to the United States. With the increasing importance of his role as roving ambassador for the Soviet nuclear administration, his relationship to Goudsmit intensified as well. The latter valued being able to meet Emel’ianov in the United States, as a letter in connection with Emel’ianov’s appointment as Head of Glavatom reveals:

“I read in the New York Times that you have been honored by an appointment as head of the Russian atomic energy board. This must be a most interesting position in which I am sure you can do a lot to promote peaceful uses of atomic energy. Does this new appointment mean that we won’t see you over here as often as we would like to?”⁷⁶

Goudsmit was interested, it seems, in keeping direct contact with Emel’ianov, whose future role as a chairman of Glavatom was yet to be clarified. Despite Goudsmit’s concerns, Emel’ianov was back in New York in November 1958, following the second General Conference of the IAEA. There he received another letter from Goudsmit:

“It was nice to talk to you on the phone. It is such a long time since we saw each other. I am now attending a meeting of the American Philosophical Society and shall be in New York again on

72 EMEL’IANOV Atom shagaet po stranam, p. 10.

73 Active from late 1943 to October 1945, the ALSOS Mission was set up to gather intelligence on the German atomic project, searching liberated territory for scientific records, personnel and technology. Samuel Goudsmit was chief scientific advisor. An informative account can be found in: HART The ALSOS Mission, 1943–1945.

74 GOLDBERG Between Old and New, pp. 117–137.

75 Of course, this story of Emel’ianov’s serves also to underscore the importance of Soviet nuclear science. Yet the personal contact between Goudsmit and Emel’ianov, which the latter described as cordial and long-lasting, involved more than comparison of the scientific potential of Soviet and American civilian nuclear atomic programs: EMEL’IANOV Atom shagaet po stranam, p. 11. The *Physical Review* occasionally published papers by Soviet scientists, mostly researchers affiliated to the Soviet Academy of Sciences.

76 AIP, Niels Bohr Library & Archives, Digital Collection, Folder 65, Box 9, Samuel A. Goudsmit papers: Goudsmit to Emel’ianov, September 30th, 1957.

Friday. I'll call you and [...] we can meet for lunch or for a drink this weekend. You must have been pleased with the Nobel Prize selection this year."⁷⁷

Goudsmit was referring to the Nobel Prize for Physics, which had been awarded to three Soviet scientists for the discovery and theorization of the Cherenkov effect. Goudsmit's reference to the Nobel Prize illustrates the centrality of science, understood as universal, to his friendly correspondence with Emel'ianov. In September 1959, Lunik 2, the first spacecraft to hit the moon, inspired another letter. Sent to Emel'ianov's office at the United Nations building in New York, it was marked by an enormous optimism about the power of cultural and scientific exchange, which would bring the main antagonists of the Cold War closer together. In it, Goudsmit expressed his admiration for the success of the Lunik 2 mission: "The moon shot is a beautiful achievement of engineering. I hope that it also will yield scientific data and that we shall soon hear about those, too."⁷⁸ Acknowledging the effort to achieve détente through cultural exchange, most notably reflected that year in an American exhibition in Moscow and a corresponding Soviet exhibition in New York, Goudsmit expressed his hope that "your [Emel'ianov's] mission here will turn out to the benefit of all and will result in closer and less formal relations between scientists."⁷⁹ Here, the well-informed Goudsmit was referring to meetings to be held in the framework of Khrushchev's famous visit to the United States, the Soviet party having arrived the day before, on 15 September 1959. In Washington D. C., Emel'ianov discussed future cooperation and knowledge-exchange in the field of atomic energy. Among other things, an exchange of visits was planned that would see John A. McCone (1902–1991), chairman of the US Atomic Energy Commission's (AEC), travel to the USSR, and Emel'ianov to the United States,⁸⁰ each showing the other round non-military nuclear facilities and reactors.⁸¹ Earlier that same year, during Vice President Richard M. Nixon's (1913–1994) visit in the Soviet Union, Emel'ianov had already started talks on the prospects for nuclear knowledge-exchange with Hyman Rickover (1900–1986), known in the US as the "Father of the Nuclear Navy". Meeting McCone in Washington, Emel'ianov expressed his regret that it was Rickover and not McCone who had accompanied Nixon to the Soviet Union. Obviously, Emel'ianov preferred to negotiate directly with the head of the AEC, and he reasserted his concern to strengthen

77 AIP, Niels Bohr Library & Archives, Digital Collection, Samuel A. Goudsmit papers, Folder 65, Box 9: Goudsmit to Emelyanov, November 15th, 1958.

78 AIP, Niels Bohr Library & Archives, Digital Collection, Samuel A. Goudsmit papers, Folder 65, Box 9: Goudsmit to Emeyanov, September 16th, 1959.

79 AIP, Niels Bohr Library & Archives, Digital Collection, Samuel A. Goudsmit papers, Folder 65, Box 9: Goudsmit to Emelyanov, 16. September 1959.

80 This meeting between Emel'ianov and McCone was of great interest to the IAEA and by 17 September the US Representative in Vienna had already informed the Board of Governors of the success of the discussions. See: IAEA Archives, Box 33002, GOV/OR. 165: Official Record of the Hundred and Sixty-Fifth Meeting of the Board of Governors, 17 September 1959, p. 3.

81 Foreign Relations of the United States, 1958–1960, Volume 10, Document 110 (Memorandum of Conversation).

ties between Soviet and American atomic scientists.⁸² Emel'ianov's talks with McCone did indeed lead to the closer relations that Goudsmit had hoped for, and on 24 November, in Washington, the Soviet Union and the United States signed a memorandum of cooperation on the exchange of unclassified information in the field of atomic energy.⁸³

The correspondence between Emel'ianov and Goudsmit revolved for the most part around important scientific-technological events and achievements, though it also reflects moments of political turbulence. In this, it shows how an alternative to the prevailing Western interpretation of events might be offered to peers on the other side of the Iron Curtain.

The U-2 incident in May 1960 severely damaged relations between the United States and the Soviet Union: a summit meeting that was to have resolved the Berlin Crisis was canceled and the conflict over the city further intensified when the new US president, John F. Kennedy (1917–1963) signaled that he would not negotiate over the issue. This escalating tension between the superpowers was felt in the IAEA as well, notably at a meeting of the IAEA Board of Governors in early 1961, where the simmering conflict around the introduction of a system of nuclear safeguards came to a head. Emel'ianov voiced his government's main concern, which was that the proposed system, which relied on on-site inspections of nuclear facilities, jeopardized the sovereignty of the Agency's member states.⁸⁴ Allowing IAEA inspectors unhindered access at any time could leave them open to industrial or even military espionage.⁸⁵ The conflict around safeguards was taken up by the American press and Emel'ianov himself sometimes made the headlines as an example of how the Soviet delegation was seeking to sabotage the Agency's work.⁸⁶

When Sigvard Eklund (1911–2000) was appointed Director General of the IAEA in the summer of the same year, the positions of the Cold War parties became increasingly entrenched.⁸⁷ Back in 1957, the Soviet Union had reluctantly accepted the appointment of American politician Sterling Cole (1904–1987) as the Agency's first Director General. In return, the US delegation had informally promised to consider Soviet interests in future personnel decisions.⁸⁸ With Eklund's appointment, the hoped-for trade-off regarding the Agency's most prestigious post failed to happen. Prior to his assignment to the Agency, the Swedish scientist had worked on his country's nuclear weapons program

82 According to Emel'ianov's memoirs, Rickover behaved offensively and undiplomatically during his visit, which may have been another reason to seek direct contact with McCone: EMEL'IANOV *Atom shagaet po stranam*, pp. 20–24.

83 Memorandum on Atomic Energy Cooperation.

84 FISCHER *History of the International Atomic Energy Agency*, pp. 245–248.

85 FISCHER *History of the International Atomic Energy Agency*, pp. 247–248.

86 HANDLER U. S. – Soviet Clash Marks Atom Talk, in: *New York Times* (07.02.1961).

87 For the debate and the election of Sigvard Eklund see: IAEA Archives, Box 33003, GOV/OR. 261: Official Record of the Two Hundred and Sixty-First Meeting of the Board of Governors, 22 June 1961, and GOV/OR., 262: Official Record of the Two Hundred and Sixty-Second Meeting of the Board of Governors, 22 June 1961.

88 ARAN, f. 1522, op. 1, d. 170 (*Spravka o pervoi sessii general'noi konferentsii mezhdunarodnogo agentstva po atomnoi energii*), l. 7–10.

and was known to the Soviet representatives as an unappreciative and prying visitor to the Obninsk power plant in 1955.⁸⁹ His election as Director General thus set the scene for further confrontation between the IAEA's most important delegations.⁹⁰

Not himself a member of the US delegation to the IAEA, Goudsmit was evidently disturbed by the discrepancy between his own image of Emel'ianov and the portrait drawn by the press in 1961. He contacted him again, no doubt in the hope of gaining a more balanced view on the conflict over safeguards: "Occasionally I read about you in the newspapers here but do not always understand the statements attributed to you. Perhaps we will meet again soon in the near future and then you can explain your views to me in person."⁹¹ Emel'ianov answered a month later, making a serious attempt to clarify his own point of view and treating Goudsmit as a friend behind enemy lines:

"My dear friend! [...] I must say that a very unfavourable atmosphere had arisen at the Agency's conference in Vienna last September that made it extremely difficult to solve practical problems of cooperation and to come to decisions acceptable for all. [...] Dr. Eklund did not withdraw his candidature despite the advice of many sensible people. Of course the Director General gets annually 40,000 dollars. In our perishable world it acts on some people as a boa-constrictor on a rabbit. [...] [A] very complicated [sic] situation for cooperation was created in Vienna."⁹²

This exchange over the end of 1961 and the beginning of 1962 sheds light on the resilience of direct contacts between nuclear scientists. The fact that the stakes at this time were extremely high for both sides did not stop the two of them writing to each other and even touching on sensitive topics. Addressing the editor of one of the most important journals in the field of nuclear physics, Emel'ianov was seeking to explain his position on one of the most intransigent conflicts in the early history of the IAEA at one of the hottest moments of the Cold War. Mutual understanding and confidence between scientists were based on direct contact and so needed to be defended through the same channels.

89 ARAN, f. 579, op. 1–1955, d. 19 (Perepiska s uchrezhdeniiami AN SSSR po priezdu v SSSR inostrannykh uchenykh na Sessiiu AN SSSR po mirnomu ispol'zovaniiu atomnoi energii), l. 3; ICHIKAWA Obninsk, 1955, p. 37.

90 Eklund's appointment became the subject of fierce, sometimes polemical discussion at the IAEA's Board of Governors. Emel'ianov accused the "Western powers", amongst other things, of resorting to dictatorial methods, using "the voting machine" to impose their political agenda on all the member states: IAEA Archives, Box 33003, GOV/OR. 262, pp. 1–16: Official Record of the Two Hundred and Sixty-Second Meeting of the IAEA Board of Governors, held at the Neue Hofburg, Vienna, on Thursday, 22 June 1961; see also FISCHER History of the International Atomic Energy Agency, pp. 84–85.

91 AIP, Niels Bohr Library & Archives, Digital Collection, Samuel A. Goudsmit papers, Folder 65, Box 9: Goudsmit to Emelyanov, December 15th, 1961.

92 AIP, Niels Bohr Library & Archives, Digital Collection, Samuel A. Goudsmit papers, Folder 65, Box 9: Emelyanov to Goudsmit, January 15th, 1962.

Prospects: The Third and Fourth Geneva Conferences

The success of the first and second Geneva Conferences and the growing reach and authority of the IAEA led the UN Scientific Advisory Committee (UNSAC) to conclude that another major conference on the peaceful uses of nuclear energy was desirable.⁹³ After the first groundbreaking discoveries were made public in the 1950s, the main problem of those promoting nuclear energy was to bring the new technology to the industrial stage. The third Geneva Conference was thus somewhat narrower in terms of content, being confined to papers dealing with nuclear power and closely related topics.⁹⁴ As a member of both the UN's and the IAEA's Scientific Advisory Committees Emel'ianov was involved in the planning of the conference agenda, successfully arguing that the oral presentations should not be limited to science but include important engineering papers as well. At a preparatory meeting of UNSAC in Uzbekistan he explained that an exclusive focus on science was likely to exclude important engineering papers, such as one on the Soviet experience with the icebreaker *Lenin*.⁹⁵ Emel'ianov was chosen to preside over the conference, which opened on 1 August 1964. In his opening address he explained the strong focus on nuclear power and did not forget to mention the Soviet Union's pioneering achievements in nuclear shipbuilding.⁹⁶ He emphasized the importance of international collaboration and the role of the IAEA:

“In the light of the magnificent prospects before us in the field of atomic science and of the complexity of the problems which that science has to solve, it is essential for scientists to collaborate and to unite their forces. [...] The International Atomic Energy Agency has begun to expand its activities. It has convened a series of important scientific meetings at which many atomic problems have been discussed in detail. [...] But all the conferences, meetings and symposia held during the past six years cannot replace international conferences convened by the United Nations, because the latter provide particularly striking and convincing evidence of the importance of diverting atomic energy from the path leading to war into the path of peace and progress.”⁹⁷

The arguments of the doyen of Soviet nuclear internationalism seem not to have changed over the nine years since he had first visited Geneva. He still promoted his country's eagerness to collaborate with the international community, renewing his commitment to the Agency and to the great conferences geared towards the media.

Seven years later, the next and last of the Geneva Conferences on the Peaceful Uses of Atomic Energy was held. By then, Emel'ianov was no longer involved, having retired

93 See IAEA Archives, Box 33004, GOV/OR. 335: Official Record of the Three Hundred and Thirty-Fifth Meeting of the Board of Governors, December 4th, 1963, pp. 5–7.

94 The Third Geneva Conference, in: IAEA Bulletin 6 (4) (1964), p. 3.

95 IAEA Archives, SAC Meetings 12–13, 1964–1965, Box 16917: Provisional Summary Record of the Fifty-Ninth Meeting of the United Nations Scientific Advisory Committee, held at the Ministry of Foreign Affairs of the Uzbek SSR, Tashkent, USSR, on Tuesday, April 21, 1964, pp. 1–13, here p. 12.

96 The Tasks Ahead, in: IAEA Bulletin 6 (4) (1964), p. 5.

97 The Tasks Ahead, in: IAEA Bulletin 6 (4) (1964), p. 7.

from his posts at the IAEA and on the UN Scientific Advisory Committee in 1965.⁹⁸ Already in 1962 he had been replaced as head of GKAE (the former Glavatom) by Andranik M. Petrosiants (1906–2005), now one of the Soviet delegates to the Fourth Geneva Conference of 1971. While the third conference “marked the beginning of an era of economic nuclear power”, the gathering in September 1971 was even more oriented towards practical applications of atomic technology.⁹⁹ Faced with public skepticism about the economic desirability of nuclear power and still unresolved questions about the environmental hazards represented by radioactive waste, some speakers at the conference emphatically promoted the benefits of nuclear power. Charged with summing-up the conference, the Soviet theoretical physicist and academician Nikolai N. Bogoliubov (1909–1992) strongly championed the further development of nuclear power production, not forgetting of course to allude to the major Soviet showpieces in the field – the Obninsk power plant and the icebreaker *Lenin*.¹⁰⁰

In the sixteen years between the first and last Geneva Conferences the world of nuclear science and technology had changed a great deal: particle accelerators had been brought into operation at international research centers – institutions that slowly developed trans-systemic cooperation and even established a traveling fellowship program.¹⁰¹ Power plant projects based on different types of ever more efficient fission reactors were implemented at full scale, while other nuclear dreams, such as power generation from controlled nuclear fusion, still remained out of reach. Throughout these sixteen years of international exchange and cooperation, the scientists’ self-image as international agents of a universal scientific-technological progress was maintained. The need for cooperation and knowledge-exchange was emphasized in Bogoliubov’s 1971 speech, just as it had been in every such address at the three preceding Geneva Conferences.

Face-to-face contacts at gatherings such as the Geneva Conferences and the personal correspondence across the Cold War divide that we have seen in the case of Emel’ianov and Goudsmit maintained the nuclear spirit of Geneva, the spirit of universal progress and cooperation despite ideological conflict that had first been evoked at the Palais des Nations in 1955.

Concluding Remarks: Negotiating Loyalties and Boundaries

It was the purpose of this article to outline the process of formation of cross-boundary networks in the field of atomic energy. It has shown how Soviet scientists needed to negotiate boundaries between different reference groups as they sought acknowledgment both from an international scientific community striving for the rapid growth of nu-

98 IAEA Archives, Box 16917: Press Release. IAEA’s New Scientific Advisory Committee Holds First Meeting, pp. 1–2.

99 The Fourth Geneva Conference, in: IAEA Bulletin 13 (5) (1971), p. 4.

100 The Fourth Geneva Conference, in: IAEA Bulletin 13 (5) (1971), pp. 7, 18.

101 LOCK A History of the Collaboration.

clear science and technology and from the Party and state authorities who decided on resource allocation, travel opportunities etc. This last was decisive for Soviet scientists, because the framework for the development of the nuclear science and atomic energy lobby development was laid at major international conferences such as the First Geneva Conference in 1955.

Wide media coverage and intensive intelligence monitoring brought the proceedings in Geneva to a vast audience around the globe. The central message conveyed through all channels was the scientists' agreement among themselves that 1) research on and practical exploitation of atomic energy and fission products were generally desirable for mankind, and that 2) progress, understood as a linear accumulation of knowledge and capabilities, could only be accelerated by intensive cross-boundary cooperation and knowledge-exchange. This spirit of mutual understanding and the manifest will to overcome ideological divides by keeping science clear of politics laid the foundations for future international networks. It was because of the scheme of multiple loyalties (to the state, the party, the academy, the international scientific community etc.) that contacts between East and West were maintained even during Cold War crises, thanks to the reference points provided by the spirit of Geneva.

This article has described the 1955 Geneva Conference as a central source of contacts across the Cold War divide and sketched some of the distinctive features of Soviet science diplomacy in the context of institutionalized contacts around the "benign atom". Once established, these contacts were kept up at moments of political crisis, playing a crucial role in maintaining communication and scientific knowledge-exchange. Furthermore, the scientists' claim to a universal community of scientific practice and discourse provided political leaderships with platforms and networks for Track II diplomacy, and nuclear internationalism arguably helped to build confidence between the superpowers. Following Soviet scientists through the first stages of nuclear internationalism reveals that their different loyalties and the boundaries between them needed to be constantly negotiated in order to sustain contact, privileges, influence and not least public and governmental support for the further nuclear research.

Archival Material

Архив Россииской академии наук (ARAN) (Archive of the Russian Academy of Sciences), Moscow

Fond 2: Sekretariat Prezidiuma Rossijskoj akademii nauk (Secretariat of the Presidium of the Russian Academy of Sciences)

Fond 579: Glavnoe upravlenie vneshnich svyazei Akademii nauk SSSR (Main Department on External Relations of the Academy of Sciences of the USSR)

Fond 694: Personal Papers of Aleksandr Vasilievich Topchiev (1907–1962)

Fond 1522: Otdel rabot po atomnoi energii Akademii nauk SSSR (Atomic Energy Department of the Academy of Sciences of the USSR)

IAEA Archives, Vienna

Records of the Board of Governors

Records of the Scientific Advisory Committee

American Institute of Physics (AIP), Niels Bohr Library & Archives, One Physics
Ellipse, College Park, MD 20740, USA

Digital Collection, Samuel A. Goudsmit Papers, [https://repository.aip.org/islandora/object/
nbla:AR2000-0092](https://repository.aip.org/islandora/object/nbla:AR2000-0092) (19.12.2017)

Cited Publications

- AFIANI, VITALII IU. Akademiia nauk v resheniiach TsK RKP(b) – VKP(b) – KPSS, 1952–1958. Moskva 2010.
- AUST, MARTIN Russland und die Sowjetunion in der Globalgeschichte, in: Martin Aust (ed.): Globalisierung imperial und sozialistisch. Russland und die Sowjetunion in der Globalgeschichte 1851–1991. Frankfurt a. M. 2013, pp. 13–38. = Reihe Globalgeschichte, 13.
- BARTH, KAI-HENRIK Catalysts of Change. Scientists as Transnational Arms Control Advocates in the 1980s, in: John Krige / Kai-Henrik Barth (eds): Global Power Knowledge. Science and Technology in International Affairs. Chicago 2006, pp. 182–206.
- BLOKHINTSEV DMITRII I. Novaia era v razvitii nauki, in: *Mezhdunarodnaia zhizn'* (1958), 3, pp. 6–7.
- BOBROV, A. I. Atomnyi bogatyr' sozdan vsei stranoi, in: Iu. V. Pchelkin (ed.): *Atomnyi ledokol "Lenin"*. Leningrad 1960, pp. 5–21.
- BROWN, ROBERT L. Nuclear Authority. The IAEA and the Absolute Weapon. Washington, DC 2015.
- CHARPIE, ROBERT A. The Geneva Conference, in: *Scientific American* 193 (1955), 4, pp. 27–33.
- CHERNOUS'KO, L. Flagman sokrushaet l'dy, in: *Znanie – sila* (1961), 4, pp. 12–13.
- CHEARNUS, IRA Eisenhower's Atoms for Peace. College Station 2002.
- COCKROFT, JOHN The Future of Atomic Energy, in: *Bulletin of the Atomic Scientist* 11 (1955), 8, pp. 285–288.
- CRAWFORD, ELISABETH T. / SHINN, TERRY / SÖRLIN, SVERKER An Introductory Essay, in: Elisabeth T. Crawford / Terry Shinn / Sverker Sörlin (eds): *Denationalizing Science. The Contexts of International Scientific Practice*. Dordrecht, Boston 1993, pp. 1–42.
- CRAWFORD, ELISABETH T. Nationalism and Internationalism in Science, 1880–1939. Four Studies of the Nobel Population. Cambridge, New York 1992.
- DAVID-FOX, MICHAEL The Implications of Transnationalism, in: *Kritika* 12 (2011), 4, pp. 885–904.
- DENISOV, N. / VVEDENSKII, A. Prazdnik v Leningrade, in: *Pravda* (13.09.1959), p. 3.
- DROGAN, MARA The Nuclear Imperative. Atoms for Peace and the Development of U. S. Policy on Exporting Nuclear Power, 1953–1955, in: *Diplomatic History* 40 (2016), 5, pp. 948–974.
- EMEL'IANOV, VASILII S. Atom shagaet po stranam. Moskva 1966.
- EVANGELISTA, MATTHEW Transnational Organizations and the Cold War, in: Melvyn P. Leffler / Odd Arne Westad (eds): *Cambridge History of the Cold War*. Cambridge 2010, pp. 400–421.
- EVANGELISTA, MATTHEW Unarmed Forces. The Transnational Movement to End the Cold War. Ithaca, NY 1999.

- FÄHNRIICH, BIRTE *Science Diplomacy: Investigating the Perspective of Scholars on Politics-Science Collaboration in International Affairs*, in: *Public Understanding of Science* 26 (2017), 6, pp. 688–703.
- FEDOROV, V. *15 dnei v Zheneve. (Vtoraia mezhdunarodnaia konferenciia po mirnomu izpol'zovaniiu atomnoi energii, Sent. 1958)*. Moskva 1960.
- FERMI, LAURA *Atoms for the World. United States Participation in the Conference on the Peaceful Uses of Atomic Energy*. Chicago, London 1974.
- FISCHER, DAVID *History of the International Atomic Energy Agency. The First Forty Years*. Vienna 1997.
- Foreign Relations of the United States, 1958–1960, Volume 10. Eastern Europe Region, Soviet Union, Cyprus*. Eds Ronald D. Landa [et al.]. Washington 1993.
- GESTWA, KLAUS / ROHDEWALD, STEFAN *Verflechtungsstudien. Naturwissenschaft und Technik im Kalten Krieg*, in: *Osteuropa* 59 (2009), 10, pp. 5–14.
- GOLDBERG, STANLEY *Between Old and New. Goudsmit at Brookhaven*, in: Michelangelo de Maria / Mario Grilli / Fabio Sebastiani (eds): *The Restructuring of Physical Sciences in Europe and the United States, 1945–1960. Proceedings of the International Conference Held in Rome, Università “La Sapienza”, 19–23 September 1988*. Singapore, Teaneck, NJ 1989, pp. 117–137.
- HANDLER, M. S. U. S. – *Soviet Clash Marks Atom Talk*, in: *New York Times* (07.02.1961).
- HART, JOHN D. *The ALSOS Mission, 1943–1945. A Secret U. S. Scientific Intelligence Unit*, in: *International Journal of Intelligence and Counter Intelligence* 18 (2005), 3, pp. 508–537.
- HEWLETT, RICHARD G. / HOLL, JACK M. *Atoms for Peace and War. 1953–1962. Eisenhower and the Atomic Energy Commission*. Ed. by the U. S. Atomic Energy Commission. Berkeley 1989.
- HOLLINGS, CHRISTOPHER *Scientific Communication Across the Iron Curtain*. Cham 2016.
- HOLLOWAY, DAVID *Stalin and the Bomb. The Soviet Union and Atomic Energy, 1939–56*. New Haven 1994.
- HOLLOWAY, DAVID *The Soviet Union and the Creation of the International Atomic Energy Agency*, in: *Cold War History* 16 (2016), 2, pp. 177–193.
- ICHIKAWA, HIROSHI *Obninsk, 1955. The World's First Nuclear Power Plant and “The Atomic Diplomacy” by Soviet Scientists*, in: *Historia Scientiarum* 26 (2016), 1, pp. 25–41.
- JASANOFF, SHEILA *The Fifth Branch. Science Advisers as Policymakers*. Cambridge, MA 1990.
- JOSEPHSON, PAUL R. *Red Atom. Russia's Nuclear Power Program from Stalin to Today*. New York 2000.
- KAZACHKOVSKII, OLEG D. *Zapiski fizika o voine i mire*. Obninsk 2010.
- KLEIN, JEAN *Atomic Scientists and Disarmament. The Pugwash Movement*, in: Michel Girard (ed): *Individualism and World Politics*. London 1999, pp. 160–185.
- KOJEVNIKOV, ALEXEI *Die Mobilmachung der sowjetischen Wissenschaft*, in: Bernd Greiner / Tim Müller / Claudia Weber (eds): *Macht und Geist im Kalten Krieg*. Hamburg 2011, pp. 87–107.
- KOJEVNIKOV, ALEXEI *The Phenomenon of Soviet Science*, in: Michael D. Gordin / Karl Hall / Alexei B. Kojevnikov (eds): *Intelligentsia Science. The Russian Century, 1860–1960*. Chicago 2008, pp. 115–135.
- KREMENTSOV, NIKOLAI *International Science between the World Wars. The Case of Genetics*. New York 2005. = *Routledge Studies in the History of Science, Technology, and Medicine* 24.
- KREMENTSOV, NIKOLAI *Sovetskaia nauka na poroge kholodnoi voiny. “Delo KP”*, in: A. I. Dobkin / Marina Iu. Sorokina (eds): *In Memoriam. Istoricheskii sbornik pamiati F. F. Perchenka*. Moskva, Sankt-Peterburg 1995, pp. 272–291.
- KRIGE, JOHN *Atoms for Peace, Scientific Internationalism, and Scientific Intelligence*, in: *Osiris* 21 (2006), 1, pp. 161–181.
- KUBBIG, BERND W. *Kommunikatoren im Kalten Krieg. Die Pugwash-Konferenzen, die US-Sowjetische Studiengruppe und der ABM-Vertrag. Ein Kapitel in der Geschichte der Naturwissen-*

- schaft(ler) als politische Erfolgs-Geschichte – Lehren für die zukünftigen Aktivitäten. Frankfurt a. M. 1996. = HSFK-Report, 96/6.
- KURCHATOV, IGOR V. The Possibility of Producing Thermonuclear Reactions in a Gaseous Discharge. Lecture given April 26, 2956 at the British Atomic Energy Research Establishment at Harwell, England, in: *Atomnaia Energiia 1* (1956), 3, pp. 359–366.
- LOCK, WILLIAM O. A History of the Collaboration Between the European Organization for Nuclear Research (CERN) and the Joint Institute for Nuclear Research (JINR) and with Soviet Research Institutes in the USSR 1955–1970. Geneva 1975.
- MANZIONE, JOSEPH “Amusing and Amazing and Practical and Military”. The Legacy of Scientific Internationalism in American Foreign Policy, 1945–1963, in: *Diplomatic History* 24 (2000), 1, pp. 21–55.
- Memorandum on Atomic Energy Cooperation, in: *Department of State Bulletin* 31 (28.12.1959), pp. 958–959.
- MERL, STEPHAN Entstalinisierung, Reformen und Wettlauf der Systeme 1953–1964, in: Stefan Plaggenborg (ed.): *Handbuch der Geschichte Russlands*. Vol. 5: 1945–1991. Vom Ende des Zweiten Weltkriegs bis zum Zusammenbruch der Sowjetunion. Stuttgart 2002, pp. 175–318.
- ORLOVA, GALINA Kontakty tret’ei stepeni. Zаметki o vitrinnoi nauke, in: *Novoe literaturnoe obozrenie* (2014), No. 4. <http://www.nlobooks.ru/node/5264> (23.10.2017)
- OSGOOD, KENNETH ALAN Total Cold War. Eisenhower’s Secret Propaganda Battle at Home and Abroad. Lawrence, KS 2006.
- PFÄFFENBERGER, BRYAN Social Anthropology of Technology, in: *Annual Review of Anthropology* 21 (1992), pp. 491–516.
- Rech’ tovarishcha I. V. Kurchatova, in; *Pravda* 53 (22.02.1956), p. 7.
- Record of the Conference. New York 1956. = Proceedings of the International Conference on the Peaceful Uses of Atomic Energy Held in Geneva 8 August – 20 August 1955, Vol. 16.
- RICHERS, JULIA Welt-Raum. Die Sowjetunion im Orbit, in: Martin Aust (ed.): *Globalisierung imperial und sozialistisch*. Russland und die Sowjetunion in der Globalgeschichte 1851–1991. Frankfurt a. M. 2013, pp. 401–424.
- RICHMOND, YALE Cultural Exchange and the Cold War. Raising the Iron Curtain. University Park 2003.
- ROEHLICH, ELISABETH The Cold War, the Developing World, and the Creation of the International Atomic Energy Agency (IAEA), 1953–1957, in: *Cold War History* 16 (2016), 2, pp. 195–212.
- ROTLAT, JOSEPH Pugwash. A History of the Conferences on Science and World Affairs. Prague 1967.
- SAGDEEV, ROALD Z. The Making of a Soviet Scientist. My Adventures in Nuclear Fusion and Space from Stalin to Star Wars. New York 1994.
- SCHMID, SONJA D. Celebrating Tomorrow Today. The Peaceful Atom on Display in the Soviet Union, in: *Social Studies of Science* 36 (2006), 3, pp. 331–365.
- SCHMID, SONJA D. Producing Power. The Pre-Chernobyl History of the Soviet Nuclear Industry. Cambridge, MA 2015.
- SCHMID, SONJA D. Shaping the Soviet Experience of the Atomic Age. Nuclear Topics in Ogonyok, 1945–1965, in: Dick van Lente (ed.): *The Nuclear Age in Popular Media. A Transnational History, 1945–1965*. New York 2012, pp. 19–51.
- SCHROEDER-GUDEHUS, BRIGITTE Les Congrès Scientifiques et la Politique de Coopération Internationale des Académies des Sciences, in: *Relations Internationales* 62 (1990), pp. 135–148.
- SCHROEDER-GUDEHUS, BRIGITTE Probing the Master Narrative of Scientific Internationalism. Nationals and Neutrals in the 1920s, in: Rebecka Lettevall / Geert Somsen / Sven Widmalm (eds): *Neutrality in Twentieth-Century Europe. Intersections of Science, Culture, and Politics after the First World War*. New York 2012, pp. 19–42.

- SHAPIN, STEVEN Here and Everywhere: Sociology of Scientific Knowledge, in: *Annual Review of Sociology* 21 (1995), pp. 289–321.
- SOMSEN, GEERT J. A History of Universalism. Conceptions of the Internationality of Science from the Enlightenment to the Cold War, in: *Minerva* 46 (2008), 3, pp. 361–379.
- STRASSER, BRUNO J. La fabrique d'une nouvelle science. La biologie moléculaire à l'âge atomique (1945–1964). Firenze 2006. = *Bibliothèque d'histoire des sciences*, 8.
- TIMERBAEV, ROLAND M. Rossiia i iadernoe nerasprostranenie, 1945–1968, Moskva 1999.
- VASILIEVA, MARIA N. Soleils rouges. L'Ambition nucléaire soviétique. Paris 1999.
- WEISS, CHARLES How Do Science and Technology Affect International Affairs?, in: *Minerva* 53 (2015), 4, pp. 411–430.
- WITTNER, LAWRENCE S. Resisting the Bomb. A History of the World Nuclear Disarmament Movement; 1954–1970. Stanford 1999. = *The struggle against the bomb*, 2.
- WUNDERLE, ULRIKE Experten im Kalten Krieg. Kriegserfahrungen und Friedenskonzeptionen US-amerikanischer Kernphysiker 1920–1963. Paderborn 2015. = *Krieg in der Geschichte*, 84.

FABIAN LÜSCHER

M. A., PhD student and Research Assistant at the History Department of the University of Bern. Universität Bern, Historisches Institut, Unitobler, Länggassstrasse 49, 3000 Bern 9. (fabian.luescher@hist.unibe.ch).

