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9

Socialist Internationalism and Science Diplomacy Across the Iron Curtain

Geneva, Dubna, IUPAP

Climério Paulo da Silva Neto and Alexei Kojevnikov

After several years of Cold War isolation from Western peers, in the mid-1950s, Soviet scientists started redefining their role in their country's foreign relations. What began timidly as sporadic participation by a few scientists in international conferences soon acquired an official and strategic character. In 1955 a sizeable Soviet delegation of previously secret nuclear researchers participated in the First International Conference on the Peaceful Uses of Atomic Energy in Geneva. In 1956 they reorganized one of their classified nuclear laboratories into an open and international Joint Institute for Nuclear Research (JINR) in Dubna, the socialist analog of the European Organization for Nuclear Research (CERN). And in 1957, the USSR actively participated in the International Geophysical Year (IGY) and joined the International Union of Pure and Applied Physics (IUPAP).

Our chapter analyzes these developments by focusing on one of the key Soviet participants and promoters of science diplomacy, the physicist Dmitry Ivanovich Blokhintsev (1908–79). Known primarily for his works on quantum theory and the collectivist, "ensemble" interpretation of quantum mechanics, Blokhintsev relied on his political and scholarly connections to spread scientific internationalism within the socialist "second" world and beyond. In 1955 he created an international sensation with his report in Geneva on the construction and operation of the world's first nuclear power station. In 1956, Blokhintsev became the organizer and the first Director of the International Research Center in Dubna, and from 1966 to 1969, he served as the President of the International Union of Pure and Applied Physics (IUPAP). Using documents from the IUPAP archives, and several Russian archives, we investigate the Soviet (and generally, socialist) approach to scientific internationalism during the central period of the Cold War, from 1954 to 1970.

Ebbs and Flows of Soviet Scientific Internationalism

The intensity of scientific contacts between the Soviet Union and Western countries fluctuated considerably over the decades. In 1920, as the revolutionary regime emerged victorious from the devastating Russian Civil War, it lacked any international recognition and diplomatic contacts. Nevertheless, the Bolshevik government sent a representative scientific delegation to Europe, led by the physicist Abram

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Joffe, to acquire scientific literature, instruments, and restore academic connections interrupted since the start of World War I in 1914. By the end of the 1920s, along with the gradual establishment of official relations with other countries, contacts between scientists also intensified, especially between the USSR and Weimar Germany, another international pariah of that decade. A significant portion of papers published in the leading physics journals in Germany belonged to Soviet authors. The international openness of the USSR included bilateral visits, conferences, publications, and correspondence, peaking around 1930. By 1933 even the USA recognized the country diplomatically, but in that same year, the Soviet Union started isolating itself from the world, due largely to the establishment of hostile Nazi power in Germany. It rapidly became much harder for Soviet scientists to get permission to travel abroad, which aborted, for example, their cooperation with the program of International Rockefeller Fellowships for postdoctoral researchers.[1] By 1938, the looming threat of major war accompanied by vast political purges and spy-mania cut practically all channels of international contact for Soviet scientists, even personal correspondence. Only the official exchange of published scientific literature continued relatively uninterrupted.

Starting in 1941, the establishment of a wartime alliance between the USSR, the UK, and the USA reopened some scientific exchanges, primarily concerning military technology and medicine. As World War II was coming to its victorious end, Soviet scientists' hopes for a further revival of foreign contacts culminated during the Academy of Sciences' jubilee celebration in June 1945 with a major international conference attended by hundreds of allied and neutral scientists, even though some notable nuclear physicists could not accept the invitation to visit the USSR.[2] But already the following year, the development of Cold-War tensions started curtailing the internationalist trend. A high-profile political scandal erupted in 1947 following the Soviet medical delegation's visit to the USA, with publicized accusations of espionage and trading state secrets, resulting once again in the effective isolation of Soviet science.[3] Some proposals to send scientists to conferences abroad could still be submitted, but the bureaucratic procedures became so cautious and tedious that conference deadlines were almost always missed before any official permission could be granted. The USSR's participation in many international organizations also lapsed, but even at the nadir of scientific internationalism, 1951, it still retained membership in two international academic unions—astronomy and chemistry.

After its establishment in 1919, the International Research Council (IRC) boycotted World War I losers and excluded revolutionary Russia, "because of the mistrust of the new doctrines of Soviet government."[4] The downfall of the IRC and its replacement by the International Council of Scientific Unions (ICSU) in 1931 opened the way for Soviet membership. In 1930, the USSR joined the International Union of Pure

[1] Alexei B. Kozhevnikov, *Filantropiia Rokfellera i Sovetskaia Nauka* (St. Petersburg: MFIN, 1993).

[2] The Central Committee of the CPSU allowed the Academy to invite 155 foreign scientists and fifty-four scientific institutions. Russian State Archive of Socio-Political History (RGASPI). F. 17. Op. 3. D. 1052. L. 40.

[3] Nikolai Krementsov, *The Cure: A Story of Cancer and Politics from the Annals of the Cold War* (Chicago: University of Chicago Press, 2002).

[4] Frank Greenaway, *Science International: A History of the International Council of Scientific Unions* (Cambridge: Cambridge University Press, 1996), 57.

and Applied Chemistry (IUPAC) "and from 1933 to 1939 paid its annual membership fees of 675 golden dollars regularly but did not participate in the governing body of the Union."[5] On March 2, 1935, the Soviet government approved the country's participation in the International Astronomical Union (IAU).[6] IUPAP, however, since its creation in 1923, seemed too preoccupied with the German question to think about establishing ties with the Soviet Union.[7]

In the World War II aftermath ICSU wanted to avoid the exclusionist mistakes of the interwar period. The executive committees of the IAU and IUPAC tried to resume Soviet participation immediately after the war. In December 1945, IUPAC President Marston Bogert invited the Soviet Academy to nominate a Vice-President, and then repeated the invitation, emphasizing "that such nomination will give us great pleasure, meaning the cooperation of your great country and its outstanding chemists."[8] After positive endorsements from at least four lower levels of bureaucracy, on July 16, 1946, the Central Committee of the Communist Party resolved to "allow the Academy of Sciences of the USSR to take part in the work of the International Union of Chemistry" and to "approve Academician A[lexander] N. Nesmeyanov as a candidate for the post of Vice-President" of IUPAC.[9] The Central Committee also reacted positively to the IAU invitation, approving a delegation for the 1946 conference scheduled to meet in Copenhagen and the proposal to host the 1950 assembly in the USSR. The Soviet Academy was planning to demonstrate their astronomical observatories restored after wartime destruction, capable of competing with American observatories.[10]

IUPAP's attempts to bring Soviet physicists on board began early in 1947, by the Executive Committee led by the Dutch Hendrik Kramers and the French Pierre Fleury, who took office as President and Secretary General, respectively. They considered it essential to contact representatives of all nations with significant contributions to physics, especially England, the United States, and Russia. "The most difficult problem [was] contact with Russia,"[11] assessed one of the Vice-Presidents, the Dutch Cornelis Gorter. During a trip to New York, Kramers discussed the matter with the

[5] Shatalin, Pervukhin and Merkulov to Malenkov, April 5, 1946. Archive of the President of the Russian Federation (APRF), F. 3. Op. 33. D. 212. L. 12–14.

[6] RGASPI. F. 17. Op. 3. D. 968. L. 15. The USSR had participated in two meetings as observers. APRF, F. 3. Op. 33. D. 209. L. 4–5.

[7] Until 1931 IUPAP waited for the time when Germany could join and subsequently faced other challenges related to the anticipated German membership until most of the international activities became disrupted by World War II. See the chapters by Navarro, and Fauque and Fox in this volume. However, the Archives of the Russian Academy of Sciences contain a folder related to IUPAP ("Mezhdunarodnyi Soyuz chistoi i prikladnoi fiziki," ARAN, F.2, Op.1, D.595.) dated November 1937. This suggests that IUPAP invited Soviet physicists to the assembly scheduled for 1938.

[8] Bogert to Vavilov, April 8, and June 28, 1946, APRF F. 3, Op. 33, D. 212, L. 7.

[9] RGASPI. F. 17, Op. 3, D. 1059. L. 81. At the time, Nesmeyanov worked as the Dean of the Chemistry Department of Moscow State University. The Commissar of Chemical Industry characterized him as a prominent specialist and energetic researcher from the ranks of younger academicians, adding: "Nesmeyanov does not work in the military chemical industry and does not know its production secrets." Pervukhin to Molotov, January 17, 1946, APRF F. 3, Op. 33, D. 212, L. 20. Subsequently, Nesmeyanov would rise to the Secretary of the Academy of Sciences' Division of Chemistry, and in 1951 to the President of the entire academy.

[10] RGASPI. F. 17, Op. 117, D. 1056. L. 117–20.

[11] "Gorter to Fleury, January 27, 1947. IUPAP, Gothenburg secretariat, (hereafter IUPAP Gothenburg) Series E6 "Correspondence with Liaison Members," vol. 10, folder "34. Netherlands 1947–1999," Center for the History of Science, Royal Swedish Academy of Science.

physicist Dmitry Skobeltsyn, a Soviet scientific advisor to the UN Atomic Energy Commission and suggested writing to the President of the Soviet Academy, Sergei Vavilov.[12] In February 1947, Fleury had already tried to invite Vavilov to participate in IUPAP's Optics Commission but received no reply.[13]

The timing was certainly inopportune, as the political situation in the Soviet Union was then already turning away from internationalism. In 1947, Vavilov's public obligation as the academy's President was to warn his colleagues against excessive contacts with the West, which could result in revealing the country's military secrets.[14] With optics being a sensitive military technology, and as the head of Soviet research in optics, he personally was a carrier of many such secrets. The Central Committee still allowed some earlier commitments to continue: in June 1947 it approved the Soviet delegation to the International Congress of Physiologists, and in July permitted chemists to attend an IUPAC meeting in London.[15] In June 1948 it also authorized the Soviet Academy to participate in the 7th IAU General Assembly in Zurich, reconfirming support to host the next congress in Leningrad and Pulkovo.[16] Starting a major new international initiative would have been much harder, and as yet, we have found no record of Soviet considerations of IUPAP's 1947 openings. The matter would have to wait several more years for the dramatic post-Stalin shifts in the political climate.

International Atom

Immediately after Stalin's death in March 1953, a wave of remarkable changes started in both domestic and international policies of the Soviet Union, inaugurating a decade of reforms that would later become known as the "thaw" or "de-Stalinization." The country's Cold War posture also changed, at first quietly, then ever more openly, from beleaguered isolationism towards "peaceful coexistence," officially proclaimed by the first Secretary Nikita Khrushchev at the 20th Congress of the Communist Party in 1956. The new policy combined nuclear deterrence in the tense military standoff with an increasingly more open and active internationalist competition with the capitalist world in economic, social, diplomatic, and cultural spheres. In a few years, the faces of Soviet athletes, musicians, artists, and scientists became familiar

[12] J. van den Handel to Fleury, September 16, 1947, ibid. On Skobeltsyn and the UN Atomic Energy Commission, see RGASPI. F. 17. Op. 3. D. 1058. L. 8.

[13] Fleury to Vavilov, February 17, 1947, IUPAP Gothenburg, Series E6 "Correspondence with Liaison Members," vol. 12, folder "42. Russia 1947–1999."

[14] Alexei Kojevnikov, "President of Stalin's Academy: The Mask and Responsibility of Sergei Vavilov," *Isis* 87, no. 1 (1996): 18–50.

[15] RGASPI, F. 17, Op. 3. D. 1065, L. 46 and D. 1066, L. 8.

[16] RGASPI, F. 17, Op. 3, D. 1071, L. 23. The procedures for approving foreign trips were becoming increasingly stricter. The Soviet delegation for the IAU congress traveled with detailed "policy instructions," which included: "oppose any attempt to use the convention for reactionary political purposes"; "[s]eek recognition of the Russian language as an official language in plenary sessions of the Assembly" and "take all the necessary preliminary steps to [include the astronomical institutions of the other Soviet republics independently] at the next IAU congress in 1951." RGASPI, F. 17, Op. 3. D. 1072, L. 93. The 1951 assembly was postponed because of the Korean War. The Soviet delegation protested the decision and renewed the invitation for 1952, but the IAU Executive Committee accepted the proposal by Italy's National Research Council to hold the 1952 meeting in Rome.

fixtures at the most important international arenas and venues. Collectively, they made such a splash that Cold War mongers on the other side of the Iron Curtain started talking alarmingly about the "Soviet cultural offensive."[17] The pinnacles of this new cultural internationalism included the 1957 World Festival of Youth and Students in Moscow, Van Cliburn's victory in the International Tchaikovsky Competition, and, of course, the spectacular public triumph of Sputnik I.

In science, the similarly important case of the IGY (1957–58) reveals the dynamics of rapid changes. The first invitation to participate in the IGY was sent to the USSR in September 1952 and reiterated during subsequent months. At first, "senior figures at the Soviet Academy seem to have been reluctant to take a position for or against the IGY until after the death of Stalin in March 1953 and the first faint breaths of political change which followed it."[18] Then, in response to pressures from scientists for more international exchanges, the change was so swift that Nesmeyanov, by then President of the Academy of Sciences, indicated that the Soviet Union would join the IGY still in the week of Stalin's death, and a month later, the Foreign Minister Vyacheslav Molotov communicated to the Director of the United Nations Educational, Scientific and Cultural Organization (UNESCO) that the USSR was about to join the organization.

Perhaps counterintuitively, but some of the most successful openings towards scientific internationalism came from the field closest to top military secrets and state security concerns. After the success of the bomb project, Soviet nuclear physicists used their political capital and connections to powerful leaders to lobby for international exchanges in their discipline and science in general.[19] By the mid-1950s, the US government was also reconsidering its Cold War posturing and moving away from McCarthyist obsession with secrecy and spy paranoia. It became obvious that classifying all knowledge related to atomic energy had failed to prevent the USSR from developing nuclear weapons. Successful Soviet tests of fission and fusion devices convinced President Eisenhower to shift the American strategy from trying to guard the nuclear monopoly toward restricted international cooperation. His December 1953 "Atoms for Peace" initiative, based on the somewhat unverifiable assumption that it is possible to entirely separate military nuclear technologies and know-how from civilian ones, intended to keep nuclear weapons a state secret while declassifying, creating, monitoring, and profiting from the international market for uranium fuel and atomic energy production. Contrary to Eisenhower's fears that Soviet leaders would reject his challenge to open up their sources of uranium, the latter actually welcomed his Atoms for Peace proposal "with enthusiasm, corresponding to their interests in détente, international opening, and legitimizing their newly acquired status as a nuclear superpower"[20] (Figure 9.1).

[17] Frederick C. Barghoorn, *The Soviet Cultural Offensive: The Role of Cultural Diplomacy in Soviet Foreign Policy* (Princeton: Princeton University Press, 1960).

[18] Rip Bulkeley, "Aspects of the Soviet IGY," *Russian Journal of Earth Sciences* 10, no. 1 (2008): 1–17, on 2.

[19] Konstantin Ivanov, "Science after Stalin: Forging a New Image of Soviet Science," *Science in Context* 15, no. 2 (2002): 317–38.

[20] John Krige, "Atoms for Peace, Scientific Internationalism, and Scientific Intelligence," *Osiris* 21, no. 1 (2006): 161–81.

Figure 9.1 Soviet physicists visit Bevatron in the USA, December 16, 1957. Left to right: Lev Okun, Blokhintsev, Nikitin, Venedikt Dzhelepov, Luis Alvarez, Edwin McMillan, Herman (translator), Edward Lofgren, and Ernest Lawrence

Source: Available at https://nara.getarchive.net/media/visiting-russian-scientists-touring-the-bevatron-left-to-right-okun-blokhintsev-489c99. The US National Archives.

The major immediate consequence was the grandiose United Nations (UN) Conference on Peaceful Uses of Atomic Energy held in Geneva in August 1955. Under the presidency of the Indian physicist Homi Bhabha, scientists from many countries openly discussed their research on nuclear energy and reactors, significant parts of which had been extracted from formerly classified weapons programs. The USSR's huge delegation included some of the country's top nuclear physicists, who had just recently lived under the regime of strict secrecy but were happy to finally be able to travel, talk openly, and present their impressive accomplishments personally, for international recognition. Blokhintsev delivered the most sensational announcement and one of their crown results. Still relatively young and unknown, he described the operation of the world's first atomic power station built under his direction in 1954.[21]

Blokhintsev studied physics at Moscow University in 1926–30 and belonged to the first generation of post-revolutionary Russian students who learned quantum mechanics, and also Marxism, in seminars from their teachers, as part of the

[21] D. I. Blokhintsev and N. A. Nikolaev, "The First Atomic Power Station of the USSR and the Prospects of Atomic Power Development," in *Proceedings of the International Conference on the Peaceful Uses of Atomic Energy Held in Geneva, 8–20 August 1955. Vol. 3: Power Reactors* (New York: UN, 1955), 35–55.

Figure 9.2 Obninsk Power Station, 1954

Source: Available at https://rosatomnewsletter.com/wp-content/uploads/2019/08/65539892_2064734893822139_4651437967976431616_o-1548x1000.jpg.

regular curriculum. Inspired by both these novel fields, he interiorized and kept this combined intellectual commitment until the end of his life. The patriotic upsurge during the war encouraged many scientists, even those lacking proper proletarian backgrounds, to join the Communist Party, of which Blokhintsev became a member in 1943. Unlike most of his colleagues, he was also seriously inclined to use Marxist philosophy, more than just rhetorically, to interpret and popularize modern physical theories of relativity and quanta. His internationally acclaimed 1949 textbook on quantum mechanics presented in a developed form the so-called "ensemble interpretation" (also known as "collectivist" and "statistical") that challenged the then-prevailing Copenhagen philosophy from a materialist standpoint.[22]

As a party member, Blokhintsev was trusted with administrative responsibilities and positions beyond strictly academic ones. Starting in 1947, he supervised as the liaison officer one of the four research laboratories within the Soviet atomic bomb project which employed scientists from Germany. In a sense, he was already then involved in an international collaboration, albeit a peculiarly secret one. After the laboratory's reorganization into one staffed by Soviet researchers, he became its Director in 1950 tasked with developing a nuclear reactor suited for producing electrical energy. The world's first nuclear power station in Obninsk (Figure 9.2), some hundred kilometres south of Moscow, was launched officially in 1954, just in time to be

[22] Alexei Kojevnikov, "Probability, Maxism, and Quantum Ensembles," *Yearbook of the European Culture of Science 2011* 6 (2012): 211–36.

Figure 9.3 Ho Chi Minh visiting the Obninsk Atomic Power Station, with Blokhintsev, 1955

Source: Available at https://tiasang.com.vn/quan-ly-khoa-hoc/chuyen-tham-obsnink-cua-bac-ho-va-nganh-nang-luong-nguyen-tu-vn-20585/.

declassified and described to the conference in Geneva the following year.[23] Emboldened by the public success of their international debut, nuclear scientists pushed further, significantly beyond the confines of the Atoms for Peace convention. Igor Kurchatov, the Scientific Director of the entire Soviet atomic weapons project, was allowed to travel abroad and accompanied Khrushchev on an official state visit to the UK in 1956. For this unique occasion, he proposed and convinced the Politburo to authorize another major declassification of top-secret information. He presented to British peers at their main nuclear center in Harwell a sensational report on the advanced Soviet work on controlled thermonuclear fusion, thus successfully transforming this secret field of research into an academic one, open for international cooperation.

The USSR also started using its mastery of nuclear technology to strengthen international ties between socialist countries (Figure 9.3). During the 1955 Geneva Conference, members of the Soviet scientific team heard about plans to create CERN, and made an analogous proposal to Soviet authorities. Construction of what would become, for several years, the world's most powerful accelerator of elementary particles was then already on the way at one of the secret locations of the Soviet atomic project, a hundred kilometres north of Moscow. The laboratory started in 1946 with

[23] A. V. Zrodnikov and Yu. V. Frolov, "D. I. Blokhintsev–Pervyi Nauchnyi Director Laboratorii 'V,'" in *D. I. Blokhintsev. Izbrannye Trudy* (Moscow: Fizmatlit, 2009), 466–98; Hiroshi Ichikawa, "Obninsk, 1955: The World's First Nuclear Power Plant and "The Atomic Diplomacy" by Soviet Scientists," *Historia Scientiarum* 26, no. 1 (2016): 25–41.

the government's decision to authorize the building of a new type of cyclotron with the method of phase synchronization proposed by Vladimir Veksler two years earlier.[24] By 1955, the Dubna site had an operational synchrocyclotron, a six-metre accelerator of protons to the energy 680 MeV completed in 1949 and was finishing the construction of the synchrophasotron with the then unprecedented energy of 10 GeV.[25] The Soviet government approved the proposal by nuclear scientists to declassify these state-of-the-art devices and invite scientists from socialist countries to collaborate in their use for research in fundamental particle physics.

In March 1956, eleven socialist countries signed an agreement in Moscow to establish the JINR, although the name initially proposed was the "Eastern Institute for Nuclear Research." In addition to providing critical infrastructure, the USSR contributed 47% of its budget. 20% came from the People's Republic of China, whereas smaller countries contributed between 1 and 7% each. Dubna was incorporated as a town, administratively transferred to the Moscow region, and open to foreign visitors and researchers. Blokhintsev was elected the JINR's first Director, with Marian Danysz from Poland and Václav Votruba from Czechoslovakia as Vice-Directors, and he served in this position until 1965, leading the academic council that included representatives from other participating countries.[26] During the first decade of its existence, international teams of nuclear physicists in Dubna conducted pioneering investigations on strong interactions, strange particles and quarks, conservation laws in high-energy, and the creation of new trans-uranium chemical elements (Figure 9.4).[27]

In line with the strategy of peaceful coexistence, the USSR also proposed bilateral agreements for cultural exchanges with countries of the so-called first and third worlds. The first such agreements, with Syria and Norway, were signed in 1956, and new ones continued to be added at a pace of approximately six a year for the remainder of the decade, including the most well-studied one, the 1958 Lacy–Zarubin Agreement on cultural, educational, and scientific exchanges between the USSR and the USA.[28] The areas of East-West cooperation ranged from the arts and movie industry to scientific and industrial activities. Besides exchanges of scientific and technical knowledge and expertise, translation of scholarly publications, and some examples

[24] "Recollections" in M. G. Meshcheriakov. *K 100-Letiiu so dnia rozhdeniia* (Dubna, 2010), 47–50. For the history of the synchrocyclotron construction and many archival documents from the laboratory's secret period, see N. A. Rusakovich, ed., *Istoriia Sozdaniia Sinkhrotsiklotrona (v Dokumentakh i Vospominaniiakh)* (Dubna: OIIaI, 2014).

[25] N. N. Bogolyubov, ed., *Nauchnoe Sotrudnichestvo Sotsialisticheskikh Stran v Iadernoi Fizike* (Moscow: Energoatomizdat, 1986), 5.

[26] Roman Khandozhko, "Quantum Tunneling through the Iron Curtain the Soviet Nuclear City of Dubna as a Cold War Crossing Point," *Cahiers Du Monde Russe* 60, no. 2 (2019): 369–96. "Soglashenie ob Organizatsii OIIaI, 26.03.1956," available at http://www.jinr.ru/wp-content/uploads/Advisory_Bodies/Agreement_JINR_Russian.pdf

[27] D. I. Blokhintsev, "A Decade of Scientific Work at the Joint Institute for Nuclear Research," *Soviet Atomic Energy* 20, no. 4 (1966): 328–45; Jinyan Liu, Fang Wang, and Alexey Zhemchugov, "Chinese Scientists in Dubna (1956–1965)," *Chinese Annals of History of Science and Technology* 5, no. 2 (2021): 31–88.

[28] Benjamin Martin, "The Rise of the Cultural Treaty: Diplomatic Agreements and the International Politics of Culture in the Age of Three Worlds," *The International History Review* 44, no. 6 (2022): 1327–46; Gerson Sher, *From Pugwash to Putin: A Critical History of US-Soviet Scientific Cooperation* (Bloomington: Indiana University Press, 2019).

Figure 9.4 The first JINR Directorate, 1956: Danysz, Blokhintsev, Votruba
Source: The JINR Museum in Dubna.

of genuine collaboration in joint research projects, the agreement was also used for intelligence gathering, accessing the other country's scientific capacities, and related political objectives.[29]

Bringing the USSR to IUPAP

When the British physicist Nevill Mott was elected IUPAP's new President at the 7th General Assembly in 1951, the organization still had no official connection with the USSR, then at the lowest ebb of Cold War isolationism. Concerned about the lack of publications by Soviet physicists in other European languages and journals, IUPAP formed a Publication Commission in 1949 to consider translating works from Russian. One of the results was the publication of two special issues of *Il Nuovo*

[29] David Kaiser, "The Physics of Spin: Sputnik Politics and 1950s," *Social Research* 73, no. 4 (1995): 1225–52; Christopher D Hollings, *Scientific Communication Across the Iron Curtain* (Cham: Springer, 2016); Audra Wolfe, *Freedom's Laboratory: The Cold War Struggle for the Soul of Science* (Baltimore: Johns Hopkins University Press, 2018); Yale Richmond, *Cultural Exchange and the Cold War: Raising the Iron Curtain* (University Park: Penn State University Press, 2003); Brit Shields, "Mathematics, Peace, and the Cold War: Scientific Diplomacy and Richard Courant's Scientific Identity," *Historical Studies in the Natural Sciences* 46, no. 5 (2016): 556–91.

Cimento with reviews of papers on various branches of physics which had appeared in Slavic languages.[30] This would be followed, two years later, by the American Institute of Physics' much larger commitment to translating into English, cover-to-cover, several main physics journals published in the USSR. Towards the end of his presidency, Mott reflected self-critically:

> When I accepted the position as successor of Kramers, I thought the chief and most important job of the Union would be in re-establishing contacts with the Russians. But in the event, this took place through such occasions as the Geneva Conference, which had no connection with the Union and in view of the rather cumbrous organization of the latter, hardly could have had .... I think that in the next few years, the Union may acquire increasing importance in this respect. The Soviet Academy has very recently formally asked to join the Union and its representative will be at the next Executive Committee. If we can get Russians on our various committees and make them take a full part in organizing the conferences and other activities of the Union, I am sure this will be all to the good.[31]

Despite Mott's intentions, IUPAP's Executive Committee reacted slower than other international unions to the USSR's opening. The Central Committee of the CPSU approved requests from the Soviet Academy of Sciences to join the International Union of Crystallography in April 1954 and the International Union of Geophysics and Geodesy in January 1955. In May 1955 the umbrella International Council of Scientific Unions reached out to Yakov Malik, the Soviet Ambassador to the UK, who supported the proposal for the USSR to re-join the organization. One month later, the Politburo approved the academy's application for ICSU membership.[32]

It was, indeed, the 1955 Geneva Conference on the Peaceful Uses of Atomic Energy that provided the first major international encounter for Soviet physics during the Cold War and the inspiration for further exchanges both within the socialist block and across the Iron Curtain. In August 1955, the West German physicist H. Ebert wrote to Fleury inquiring whether IUPAP included Russian physicists and, if not, what would be the best way to invite them. Fleury replied in October that ICSU had written to the Soviet Academy of Sciences inviting Russian scholars to join its various unions.[33] This time, the answer arrived quickly. On November 2, Fleury wrote to Nesmeyanov that ICSU was happy to count the Soviet Academy among its members and was "delighted to foresee for the very near future the participation of physicists from your country."[34] The official invitation from Mott followed on February 7, 1956.

[30] The issues were published in 1953 and 1955. See Vieira's chapter in this volume.

[31] Mott to Amaldi, August 16, 1956, box 34, folder 1, subfolder 2 "IUPAP 1948–1959," Fondo Edoardo Amaldi, subfondo Archivio Dipartimento di Fisica, Physics Department Archives of Sapienza University of Rome (hereafter AEA).

[32] Malik to Nesmeyanov, May 24, 1955. Russian State Archive of Contemporary History (RGANI), F. 4, Op. 9, D. 1308, L. 35. For the Politburo's approval see, respectively, RGANI, F. 4, Op. 9, D. 1036, L. 116–7; RGANI, F. 3, Op. 10, D. 122, L. 154; and RGANI, F. 4, Op. 9, D. 171, L. 106.

[33] Ebert to Fleury, August 18, 1955; Fleury to Ebert, October 6, 1955. IUPAP Gothenburg, Series E6 "Correspondence with Liaison Members," vol. 6, folder "19. Fed. Republic Germany 1952–1998.

[34] Fleury to the President of the Academy of Sciences of the USSR, November 2, 1955, IUPAP Gothenburg, Series E6 "Correspondence with Liaison Members," vol. 12, folder "42. Russia 1947–1999."

He wrote that if the USSR joins IUPAP, the Executive Committee will wish to invite a representative of the USSR to this meeting as an observer, and that the General Assembly, which will meet in 1957 in Rome, will also consider it desirable that the Soviet Union be represented in the Executive Committee.[35] On February 22, 1956, the Academy signaled to Mott that it was proposing to join IUPAP, which the Soviet Politburo officially approved on July 7.[36] The Soviet rationale behind the decision clearly corresponded with the general policy towards "peaceful coexistence" as with joining other international unions and academic organizations. As summed up by the Director of the Central Committee's Department of Science, Universities, and Schools Vladimir Kirillin: "The participation of Soviet scientists in the Geneva Conference on the Peaceful Uses of Atomic Energy and the holding of a number of conferences on physics in the USSR with the participation of foreign scientists showed that the expansion of scientific ties between Soviet physicists and foreign scientists promotes the development of science and creates opportunities for obtaining broad information about achievements of foreign science."[37]

On July 13, 1956, the Soviet Academy informed Mott about its decision to join IUPAP and delegated the senior physicist Joffe as an observer to the Ottawa meeting of the Executive Committee. Officially and finally, the USSR became a member at the 9th General Assembly in Rome in 1957.[38] That same year the General Assembly created the Commission on High Energy Physics which would play a key role in promoting East-West contacts in physics. The stated functions of the commission were to organize international meetings to discuss scientific results and the construction of high-energy accelerators, promote international cooperation between laboratories, and enable the exchange of data, primarily between the USA, the USSR, and Western Europe. Its limited version of internationalism was reflected in the commission's membership, which included two physicists from each of its three geographical nodes. The Soviet side was represented by Igor Tamm and Veksler, and after 1960, Blokhintsev as Tamm's replacement. Later, the commission somewhat expanded its focus to include Japan and Eastern Europe.[39]

The commission assumed responsibility for authoritative "Rochester" conferences in particle physics, which had been previously meeting annually in Rochester, NY, but after 1957 started rotating internationally between different countries. The USSR hosted this event four times (Kiev 1959, Dubna 1964, Kiev 1970, Tbilisi 1976), and East Germany once (Leipzig 1984). Until the end of the Cold War, these conferences provided the most important platform for regular interactions between top high-energy physicists from the East and the West. Possibilities for long-term visits

[35] APRF, F. 3, Op. 33, D. 201, L. 128. The archive contains Mott's letter translated into Russian.

[36] RGASPI. F. 17. Op. 3. D. 1072. L. 3.

[37] APRF. F. 3. On. 33. D. 201. L. 124–5.

[38] Mott to Engelhardt, February 27, 1956; Sisakyan to Mott, July 13, 1956; Fleury to Sisakyan, July 27, 1956, IUPAP Gothenburg, Series E6 "Correspondence with Liaison Members," vol. 12, folder "42. Russia 1947–1999."

[39] HEP Commission, Minutes of the 1st and 4th meetings. IUPAP, Quebec secretariat, series E1, (hereafter IUPAP Quebec), vol. 4, folder "IUPAP Fleury's Correspondence 1957–1963, Commission on High Energy Physics, Minutes of Meetings," Center for the History of Science, Royal Swedish Academy of Sciences. Altogether, the USSR participated in six out of eight IUPAP's commissions. For a detailed analysis of the Commission on High Energy Physics, see Hof's chapter in this volume.

were occasionally discussed, but happened irregularly, outside of the commission's managerial purview.[40] According to Wolfgang Panofsky, and probably during one of the commission's meetings, Veksler made a joke about the amount of time and effort spent on sorting out diplomatic formalities instead of real scientific problems: "[t]here used to be two kinds of high-energy physics: experimental physics and theoretical physics. Now we have to add to that diplomatic physics."[41]

By 1959, the new President, Italian Edoardo Amaldi was thinking about changes to IUPAP's statutes to adapt to the increasingly more diverse, geographically polarized, and decolonizing world of physics. To him, it seemed a foregone conclusion that a representative from the USSR would also need someday to serve as the leader of IUPAP. From Amaldi's correspondence with past Presidents and Secretaries of various national committees, it is clear that the remaining disagreements were not about "whether" but "when."[42] As the Union prepared to gather in Ottawa in September 1960 for its 10th General Assembly, Mott was still "reluctant to put the presidency in the hands of a representative of a country where the government still exercises so close a control over scientific activities, and in which the western concept of 'an independent scientist' is only just beginning to find a place." Amaldi and chairmen of other European national committees shared this feeling. Mott preferred Bhabha from India as "the most eminent scientist in the most important uncommitted Eastern country" as the best candidate for the presidency.[43]

This proposal was opposed by the chairman of the American National Committee, Robert Brode, who insisted that in the wake of Presidents from England, the USA, the Netherlands, Sweden, and Italy, it would be appropriate to elect first a representative from France, and then from Russia. He proposed "to nominate Fleury for president, and subject to the concurrence of the Russians, Tamm for vice-president." In April 1960, he visited Moscow and discussed the matter with Joffe and other Russian physicists, who "confirmed a general feeling of enthusiasm for Tamm for this position." Brode had also considered Joffe and Veksler. Masao Kotani of Japan, who favored a Soviet President in 1960, had suggested Joffe, as internationally the most connected and recognized representative.[44] But the patriarch of Soviet physics was then already in frail health. Joffe died on October 14, 1960, aged seventy-nine. Further discussions in Moscow convinced Brode that Tamm was favored over Veksler. Thus, before the 1960 General Assembly, Brode believed Tamm to be the most likely candidate to represent the USSR as IUPAP's Vice-President.

The Assembly in Ottawa, in negotiations behind the doors, constructed a compromise between the two strategies. It elected Bhabha as the President and Louis E. F. Néel from France as the first Vice-President, even though Néel's candidacy had not appeared in previous discussions. Blokhintsev emerged as the main representative of

[40] HEP Commission, Minutes of the 2nd meeting, AEA, box 28, folder 1, subfolder 16.

[41] Interview with Panofsky by Elizabeth Paris and Jean Deken, April 8, 2004, Niels Bohr Library & Archives, American Institute of Physics, College Park, MD.

[42] Amaldi to Mott, July 28, 1959; Mott to Amaldi, August 1, 1959; Amaldi to Brode October 22, 1959, AEA, box 106, folder 1, subfolder 4. On Amaldi's presidency, see Cozzoli's chapter in this volume.

[43] Mott to Amaldi, March 9, 1960, De Boer to Amaldi, May 16, 1960; Staub to Amaldi, April 26, 1960, AEA, box 106, folder 1, subfolder 4.

[44] Brode to Amaldi, March 1, and July 25, 1960; Kotani to Amaldi, May 6, 1960, AEA, box 106, folder 1, subfolder 4.

the Soviet Union. He was formally appointed by the Academy of Sciences to replace Tamm in the Commission on High Energy Physics and to travel to the USA to participate in the Rochester Conference that year.[45] The Assembly chose him to replace Joffe as one of the Vice-Presidents and the Soviet member of the Executive Committee.[46] The assembly also approved a new version of the statute with provisions for ensuring some continuity after every leadership rotation. The first Vice-President did not have to automatically become the President's successor, but the Executive Committee hoped that such a scenario would continue as an unwritten traditional practice of the Union. Unwritten also remained the additional agreement for alternations between representatives from Eastern and Western countries, and that Néel was to be succeeded by a Soviet President, which indeed happened eventually, when Blokhintsev was elected in 1966. Although not exactly as envisioned by Amaldi, this result was still generally in line with his goal of a careful and gradual integration of the USSR into IUPAP, also supported by Mott and national representatives from Europe, who wanted to wait longer before handing the presidency to a Soviet physicist.[47]

Conclusion: Realities of Socialist Internationalism

During the 1960s, USSR representatives served as Presidents of several international academic unions: Viktor Ambartsumian at the IAU (1961–64), Blokhintsev at IUPAP (1966–69), Viktor Kondratiev at IUPAC (1967–69), and Ambartsumian at the entire ICSU (1968–72). For the international scientific establishment, these appointments reflected an important shift, generally, from Western predominance towards a more diverse geographical representation, somewhat wider inclusion of the second and third-world countries, and, in particular, a belated credit to Soviet scientific achievements, represented by the Sputnik, the IGY, nuclear physics, Nobel Prizes, etc.[48] Yet

[45] Minutes of the fourth HEP Commission Meeting—IUPAP Quebec, vol. 4, folder "IUPAP Fleury's Correspondence 1957–1963," Commission on High Energy Physics, Minutes of Meetings. Personal relations between Tamm and his former graduate student, Blokhintsev, were already very strained, victim to feuds within the Soviet academic community, but also to some scientific and political disagreements. The former represented the physics group of the Academy of Sciences, whereas the younger Blokhintsev had closer ties with a rival institution, Moscow State University. Blokhintsev felt very bitter about Tamm's ("my teacher and my enemy") critical rejection that prevented the publication of his earlier paper in 1938 with an important, Nobel-level calculation (the Lamb shift), and about Tamm's and other academy physicists' opposition to his election. In 1958, Blokhintsev was elected to the USSR Academy of Sciences as a corresponding member but was never promoted to full membership there. As a Nobel-Prize winner, Tamm was certainly much more famous internationally, and he also definitely had more support in the Academy of Sciences. The Soviet government bureaucracy, on the other hand, would have had more trust in Blokhintsev as a Communist Party member who had handled responsibly several highly important administrative and international obligations. D. I. Blokhintsev, *Dnevniki 1955–1975* (Dubna: OIIaI, 2022), 44.

[46] Report of the 19th General Assembly (1960), Larkin Kerwin fonds (P202), subseries P202/B4 IUPAP (hereafter IUPAP Kerwin), folder 18 "Procès-verbal. Assemblée générale (2 dossiers) 1923–1973," Division de la gestion des documents administratifs et des archives, Université Laval, Quebec, Canada.

[47] Report of the 10th General Assembly (1960), IUPAP Kerwin, folder 18 "Procès-verbal. Assemblée générale (2 dossiers) 1923–1973."

[48] See, in this volume, Lalli's broad discussion of IUPAP phases, especially the growth of membership and changes that took place after 1957. Also in this volume, Olšáková shows how the growing influence of the socialist bloc helped to reintegrate East German scientists into the international scientific community even before the GDR was officially accepted to ICSU in 1972. For IUPAC, see Elena Zaitseva-Baum,

it can also be argued that for Soviet science, this high level of official recognition also marked the beginning of a decline in real global influence. Previously, even if underappreciated and excluded, it was seen as a serious alternative project of scientific development. With inclusion into international institutions, it blended in, adapted to the existing modus vivendi, and downplayed some of its visible distinctiveness. For example, in his role at IUPAP, Blokhintsev, like other Soviet representatives, did not push for radical changes but aimed to prove that IUPAP could continue to function normally and collegially, without serious perturbations, even when led by a scientist from a socialist country. Addressing the General Assembly, the newly elected President declared that he was "well aware of the traditions of the union and its problems" and "intended to maintain and strengthen these traditions, particularly those that contributed to understanding between countries." His goal was to extend the Union's activities and "work for peace in the world."[49]

He did this with remarkable diplomatic tact, leading the institution through some delicate diplomatic issues. One arose from the breakdown of diplomatic relations between the USSR and Israel after the latter's six-day war in 1967. The Israeli physicist Amos de-Shalit was not able to receive a Soviet visa to participate in a meeting of the Low Energy Nuclear Physics Commission in Dubna in 1968. The commission became aware of this problem too late and, despite Blokhintsev's efforts, could not remedy the situation. The invasion of Czechoslovakia by the Warsaw Pact countries later that year caused another, more serious political problem. Blokhintsev had to deal with both issues presiding at IUPAP's Executive Committee in London in September 1968. At the start of the meeting, the Swiss/American physicist Josef-Maria Jauch proposed a resolution "on the effects of certain political activity on science." Although Blokhintsev tried to avoid the discussion, arguing that "the Union traditionally avoided purely political subjects," the committee added the item to the agenda. The following day, however, Jauch withdrew his proposal, having been convinced by informal discussions that IUPAP was not an appropriate forum for it.[50]

It seems that in the end, even those IUPAP members who had concerns about electing a Soviet to presidency were ultimately satisfied that the Union managed to stay its course. After his tenure, when Blokhintsev was succeeded in a regular fashion by the American nuclear physicist Robert Bacher, Gerhard Herzberg of Canada praised the "outstanding work of President Blokhintsev during his term of office. He had accomplished his task with much tact, care, and imagination, and lent great dignity to his position." Blokhintsev himself believed he had succeeded in preserving the "good tradition of international collaboration" as "a small contribution to the efforts to reach a better understanding of the unity of the goals of all humanity." He advised the next President that "it would be extremely important for our Union, in this time,

"The First Russian President of IUPAC: Victor Kondratiev," *Chemistry International* 41, no. 3 (2019): 33–4; Danielle Fauque and Brigitte Van Tiggelen, "IUPAC Expansion from 1957 to 1975," *Chemistry International* 41, no. 3 (2019): 28–32.

[49] Report on the XIIth General Assembly (1966), 30, IUPAP Kerwin, folder 18 "Procès-verbal. Assemblée générale (2 dossiers) 1923–1973."

[50] See the Draft Resolution on the Invasion of Czechoslovakia and the Minutes of the committee meeting, London September 27–28, 1968, IUPAP Kerwin, folder 1,8 "Conseil exécutif (3 dossiers) 1963–1974."

to conserve its tradition which till now have been expressed in an explicit aspiration to support the spirit of internationalism among physicists."[51]

Yet behind this posture of official success for himself personally and for the country he represented, Blokhintsev's private diaries, which he kept through all those years, reveal a much more critical, increasingly alienated, and pessimistic thinker. As an up-and-coming scientist in the 1950s, he used to be a strong believer in the Soviet system, its progressive nature, and much more optimistic about the future of his own work, and of Soviet science in general. His experiences and expertise in the atomic project fully convinced him of the urgent necessity of "peaceful coexistence" and made him worry, intensively to the point of agonizing, of the irresponsibility of aggressive warmongering, especially apparent during his foreign trips. The looming danger of nuclear war and the possible death of millions constantly terrified him: "I now remembered a sleepless night at the hotel (The President) in Palo Alto and a foggy morning, when a deadly sorrow squeezed my heart and I cried, wept for people, for their fabulous, luminous cities. I wanted to throw myself at the window and shout, shout to the whole world: 'Stop the crazy people.'.... We need to wake up. But can we? Or is the horrible catastrophe inevitable?"[52] In an interview with an American correspondent, he then wanted to talk less about the topics of Cold War competitiveness, sputniks, and the space race, and more about scientific cooperation in areas, such as the fundamental laws of elementary particles physics, where it was possible for socialism and capitalism to work jointly towards goals common to all humanity. His preferred style of scientific internationalism thus went beyond peaceful coexistence, towards a collaborative merger that later would be called "convergence."[53]

In the 1960s, despite being at the peak of his administrative career, he grew increasingly disenchanted with Soviet bureaucratic ossification, otherwise known as the "really existing socialism." The socialist ideal was still dear to him, as in his revolutionary youth, but, as for many, his faith in the Soviet system as a realization of that ideal suffered from the series of shocking revelations about Stalinist purges, terrible losses, and mistakes during the War, dogmatism, and the suppression of a more open, reformist socialism of the Prague Spring.[54] The Soviet conflict with China especially alarmed him. Chinese scientists continued working in Dubna until 1965, but the rise of political tensions between the two communist parties was also damaging cooperation among scientists. Like many Russians, Blokhintsev felt that instead of learning from and avoiding some of the Stalinist mistakes, the Maoists succumbed even further to dangerous ideological extremes, particularly with their rejection of peaceful coexistence. Avoiding war remained his ultimate priority, and he believed that international contacts could help alleviate misunderstandings between peoples. He attributed the belligerent stance by the Chinese, at least in part, to "their total isolation from the

[51] Report on the XIIIth General Assembly (1969), 31–3, IUPAP Kerwin, folder 18 "Procès-verbal. Assemblée générale (2 dossiers) 1923–1973."

[52] Blokhintsev, *Dnevniki 1955–1975*, 43, entry of January 1, 1958.

[53] Lawrence E. Davies, "Russian Gives U.S. Pure Science Lead," *The New York Times*, 1957. For another case of Cold War convergence in science, see Climério Paulo da Silva Neto and Alexei Kojevnikov, "Convergence in Cold War Physics: Coinventing the Maser in the Postwar Soviet Union," *Berichte Zur Wissenschaftsgeschichte* 42, no. 4 (2019): 375–99.

[54] "…anticipation of the worst, the Death of the Great Idea." Blokhintsev, *Dnevniki 1955–1975*, 215, entry of November 13, 1970.

Western world. … They forget that in the West there are not only imperialists but also peoples; peoples who, in their ways, are seeking the way to happiness. There are people in the US and even in the FRG. The ultimate Chinese foolishness is [the idea] that an atomic war may accelerate the progress of humanity."[55]

Blokhintsev's peace activism provided the main context and motivation for his scientific internationalism, the promotion of East-West cooperation, and his work in Dubna and IUPAP. He retained strong and idealistic beliefs in the value of science and its capacity to solve the problems of humanity, but here, too, the realities of the 1960s world undermined his optimism. The social prestige of science was eroding, especially quickly in the West, albeit somewhat slower in the Soviet Union. International cooperation in fundamental particle physics continued, but the progress of research and new discoveries in the field were no longer as impressive as during earlier decades. Dubna's particle accelerator had been surpassed by larger machines elsewhere. Chinese physicists left, and the East Europeans often felt it was more prestigious for them to cooperate with Western colleagues at CERN. Blokhintsev understood that, especially after 1968, the Soviet official version of socialism stagnated and increasingly lost its international attractiveness—for many countries in the East, for East European allies, and also among leftist movements in the West. This also meant a decreased role for the Soviet version of scientific internationalism which he had so dutifully represented and served.[56]

[55] Blokhintsev, 97, entry of December 24, 1960. For Blokhintsev at the time, West Germany's government was still ruled by former Nazi collaborators and revanchists, who until 1970 refused to recognize officially the post-World War II western border of Poland (the Oder-Neisse line).

[56] Blokhintsev, 220, entry of May 10, 1971.

Globalizing Physics

One Hundred Years of the International Union of Pure and Applied Physics

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