

## Chapter 2

# Personal Communications

**Abstract** In this chapter, we provide a general discussion of communications between scientists in East and West from the 1920s, up to around the 1980s, with the focus being upon *personal* contacts between scientists: correspondence and face-to-face meetings. We will see that the initially quite easy contacts of the 1920s became rather more difficult under Stalin, before picking up again slightly during the Second World War, and then more dramatically following Stalin's death.

**Keywords** Scientific communication • Academic exchange programmes • Wartime exchange • Zhores Medvedev • McCarthyism • International congresses

### 2.1 Before the First World War

Before embarking upon a study of the extent to which Russian scientists were able to communicate with the rest of the world (the West in particular) during the Soviet era, it will first be beneficial to gain some idea of the situation in earlier decades, namely, in those immediately prior to the First World War.

The closing years of the 19th century and the early ones of the 20th were a period of great growth in the international practice of science: these were the years in which several international scientific organisations were founded, and also when the first discipline-specific international congresses were held.<sup>1</sup> According to some estimates, there were around 20 international scientific congresses per year during the last three decades of the 19th century, and around 30 per year in the 15 years prior to the First World War (Crawford 1992, p. 55). Moreover, the number of international scientific organisations is said to have doubled every ten years from 1885 onwards (though, in the long run, with a mortality of 60 %: see Crawford 1992, pp. 40–41).

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<sup>1</sup>For a general overview of this growth in international scientific activities, see Rosenzweig (2000, Chap. 2); see also Crawford (1992, pp. 38–43).

The Russian Empire of this period played its part in these activities, and certainly had scientists of world renown<sup>2</sup>: we might mention P.L. Chebyshev (1821–1894), D.I. Mendeleev (1834–1907), N.E. Zhukovskii (1847–1921), I.P. Pavlov (1849–1936), and V.I. Vernadskii (1863–1945). Indeed, the fact that several of these men received honours from foreign scientific societies (for example, Mendeleev’s receipt of the Royal Society’s Copley Medal, and Pavlov’s of the Nobel Prize in Physiology or Medicine<sup>3</sup>) indicates further that Russian science was taken seriously on the world stage—a consideration that will become relevant as we move into the Soviet era.

A perusal of scientific sources from this period suggests that communications between Russian scientists and those of the rest of the world were, to put it loosely, as good as we might expect them to have been, given the technologies and postal services of the time. The Russian Imperial Academy of Sciences was, for example, a member of the International Association of Academies (IAA), which existed between 1889 and 1914 (see Greenaway 1996, Chap. 1). Indeed, the Association’s 1913 General Assembly was held in Saint Petersburg (Greenaway 1996, p. 14). Travel to and from Russia appears to have been hindered only by expense and by the limitations of the transport provisions of the era. To take the Russian scientists on the above list as cases in point, we note, for example, that Mendeleev worked for some time in Heidelberg (Gordin 2008; Graham 1993, p. 48), and Pavlov in Leipzig (Graham 1993, p. 239); Vernadskii studied both in Naples and in Munich (Kautzleben and Müller 2014). Indeed, the relevant literature is full of many other instances of Russian scientists travelling abroad in the late-19th and early-20th centuries.

The ability to travel in order to work or to study, however, is a slightly different matter from the provision of the type of travel involved in scientific communication. In order to gauge the latter, we need to consider Russian attendance at international conferences. Let us take, for example, the International Congresses of Mathematicians (ICMs), the first of which was held in Zurich in 1897.<sup>4</sup> As we can see from Table 2.1, the number of Russian and Ukrainian delegates at this first congress was small, but, out of the 16 countries from which the congress’ various attendees hailed, the Russian presence was ranked 6th in terms of its size, after Switzerland, Germany, France, Italy and Austria-Hungary (Rudio 1897, p. 78). Indeed, these five countries, together with Russia, were the only nations whose contingents numbered in double figures. Looking further down Table 2.1, we see that Russian mathematicians

<sup>2</sup>For succinct overviews of Russian science in this period, see Kremontsov (1997, 2006); for a comprehensive account, see Vucinich (1970).

<sup>3</sup>On Mendeleev, see Hargittai et al. (2007); on Pavlov, see Graham (1993, p. 239). For comments on Mendeleev’s foreign contacts, and for a discussion of the status of 19th-century Russian chemistry, see Gordin (2015, Chaps. 2 and 3).

<sup>4</sup>Levels of Russian/Soviet attendance at the ICMs, as recorded in Table 2.1, will be used for illustrative purposes throughout this chapter. I have compiled these figures by using the various congress proceedings and other sources, and some of the numbers given differ from those that appear in previous books and articles on the ICMs. In the interests of saving space, I do not explain these figures here, but I hope to do so elsewhere.

**Table 2.1** Soviet attendance at International Congresses of Mathematicians (ICMs), 1897–1990 (prior to 1917, the number of Russian and Ukrainian delegates is given); figures compiled from contemporary reports, congress proceedings, and Lehto (1998)

Year	Location	Total number of delegates	Number of ‘Soviet’ delegates
1897	Zurich	208	13
1900	Paris	253	11
1904	Heidelberg	336	22
1908	Rome	535	16
1912	Cambridge	574	23
1920	Strasbourg	200	1
1924	Toronto	444	5
1928	Bologna	836	37
1932	Zurich	667	3
1936	Oslo	476	0
1950	Harvard	1,700	0
1954	Amsterdam	1,553	5
1958	Edinburgh	1,658	32
1962	Stockholm	2,107	42
1966	Moscow	4,277	1,479
1970	Nice	2,810	129
1974	Vancouver	3,121	50
1978	Helsinki	3,042	55
1983	Warsaw	2,233	283
1986	Berkeley	3,586	57
1990	Kyoto	4,102	110

maintained a presence at these congresses until the First World War. Indeed, Russia continued to be one of the few countries that provided a number of delegates in double figures.<sup>5</sup>

With regard to other disciplines, we see, for example, that four Russians (Mendeleev amongst them) and one Ukrainian attended the International Congress of Chemists in Karlsruhe in 1860 (Wurtz 1929).<sup>6</sup> Moving a little closer to our period of interest, Russian chemists appear also to have had a small presence at the subsequent International Congresses of Applied Chemistry (Wiley 1896, p. 923). Indeed, had the First World War not intervened, the ninth such congress would have been held in Saint Petersburg in 1915 (Burns and Deelstra 2011, p. 281). To take some other late-19th-century international conferences,<sup>7</sup> Russia was strongly represented at the First International Congress of Physiologists in Basel in 1889 (Franklin 1938, pp. 246, 328), and also at the Sixth International Geographical Congress,

<sup>5</sup>On Russian attendance of the early ICMs, see Demidov and Tokareva (2005, pp. 144–145).

<sup>6</sup>On this congress, see also Milt (1951) and Ihde (1961).

<sup>7</sup>For a list of late-19th- and early-20th-century scientific conferences, see Baskerville (1910).

held in London in 1895 (Keltie and Mill 1896, Appendix A). Indeed, Russian delegates had attended the London Geological Congress seven years earlier (Anon 1888). The first two international psychological congresses of the 20th century (Paris, 1900; Rome, 1905) were attended by Russian delegates (Rosenzweig 2000, pp. 35, 37), as were the Fourth International Genetics Congress (Paris, 1911: see Kremmentsov 2005, p. 4) and the First International Eugenics Congress (London, 1912: see Kremmentsov 2005, pp. 16–17). Thus, it appears from these few examples that Russian scientists were playing a very active role in world science in this period, and, in spite of the distances that they often had to travel, were frequent attendants of foreign conferences.

I conclude this section with a few brief comments on the opposite consideration: foreign travellers in Russia, and foreign participation in conferences held there. As for Russian scientists abroad, the historical literature is full of examples of non-Russians travelling to Russia for scientific visits.<sup>8</sup> Formal international conferences, on the other hand, appear to have taken place in Russia far less frequently than they did in, say, Britain, France or Germany, but they nevertheless occurred.<sup>9</sup> I cite, for example, the International Congresses on Anthropology, Prehistoric Archaeology and Zoology, held in Moscow in 1892 (Anon 1893; Sommer 2009),<sup>10</sup> the International Geological Congress, involving various expeditions across Russia, in 1897 (Palache 1897; Milanovsky 2004), and also the Eleventh International Congress of Navigation (Saint Petersburg, 1908: see Congrès 1908, 1910), all three of which attracted large numbers of foreign delegates. We see then that, although the major Russian cities were rather remote from the other scientific centres of Europe (and certainly from those of North America), conferences held in Russia in the few decades before the First World War were nevertheless able to boast significant numbers of attendees from other countries.

## 2.2 The 1920s

The First World War naturally had an enormously disruptive influence on international communications, and on international scientific contacts in particular, though I do not attempt to go into this here (see instead Kevles 1971). In the case of Russia, the October Revolution of 1917 and the civil war of 1917–1922 effected further obstruction, and yet, during the 1920s, communications between scientists in the newly-formed USSR and those in the West began slowly to return to something like their pre-war levels. In Russia, the Academy of Sciences spearheaded efforts

<sup>8</sup>To take some arbitrary examples: the American physiologist Francis Gano Benedict (see Neswald 2011, 2013), and a number of Spanish physicists (Sánchez-Ron 2002).

<sup>9</sup>Baskerville (1910) lists over 150 international congresses in the sciences, humanities and arts, but only two that took place in Russia.

<sup>10</sup>Indeed, Russian delegates regularly attended the early International Archaeological Congresses; see Marton (2009).

to re-establish contacts with the scientists of other nations (Rich 1974; see also Strekopytov 1977). However, the initial reluctance of some Western powers to recognise the Soviet Union hampered scientific exchanges through government channels for some time (Furaev 1974). Moreover, the USSR was not invited to join the newly-formed International Research Council (the successor to the IAA (p. 8), and predecessor of the International Council of Scientific Unions, ICSU).<sup>11</sup> Nevertheless, these difficulties were offset somewhat by the efforts of individuals (particularly in the provision of printed matter—see Sect. 3.1). Indeed, this was the period of the ‘fellow travellers’: the (often uncritical) Western enthusiasts for the nascent Soviet Union who made their ‘pilgrimage to Russia’. Estimates suggest that around 100,000 Americans and Europeans visited the USSR during the 1920s, scientists amongst them (David-Fox 2012, p. 1).

German-Soviet scientific ties appear to have been particularly prominent during this period (as, indeed, they had been before the First World War), since both countries found themselves largely excluded from international scientific activities.<sup>12</sup> Some Russian scientists of the 1920s were also in receipt of funding from the US-based Rockefeller Foundation<sup>13</sup>—the attitude of some Americans appears to have been that even in the absence of formal diplomatic ties with the fledgling USSR, US influence might nevertheless be increased through patronage (Hamblin 2000a).

During the early years of the USSR’s existence, there do not appear to have been any particularly stringent restrictions on Soviet scientists with regard either to correspondence or to travel, although the requirement for both Ministry of Education and Central Committee approval for any foreign trips was instituted in 1924 (Solomon and Kremontsov 2001, p. 275): permission to travel abroad became a source of power for the Communist Party over the intelligentsia (David-Fox 2002). However, as the Georgian-born biologist Zh.A. Medvedev (for more on whom, see Sect. 2.7) later commented in his book *Soviet Science*,

[t]he shortage of foreign currency was the main factor limiting the opportunities for official foreign travel. (Medvedev 1979, p. 16)

Nevertheless, Soviet scientists were able to travel throughout Europe, and even attended conferences in North America. The Russian engineer and applied mathematician A.N. Krylov, for example, addressed the 1921 Edinburgh meeting of the British Association for the Advancement of Science (Anon 1921). The pure mathematician P.S. Aleksandrov, on the other hand, travelled widely in continental Western Europe during the 1920s (Aleksandrov 1979), as did the geneticist N.I. Vavilov (who also travelled to the USA: see Kremontsov 2005, pp. 23–24), and a delegation of Russian physicists. Headed by A.F. Ioffe, this

<sup>11</sup> See Greenaway (1996, p. 18) or Schroeder-Gudehus (1973, p. 115).

<sup>12</sup> See Solomon and Kremontsov (2001, pp. 276–277, 287), Forman (1973, pp. 167–168) and Schroeder-Gudehus (1973, p. 115). On the scientific ostracism of Germany (and the other Central Powers) more generally, see Cock (1983) or Crawford (1988).

<sup>13</sup> See Solomon and Kremontsov (2001), Kojevnikov (1993) or Kojevnikov (2004, Sect. 4.2). For more on the Rockefeller Foundation’s sponsorship of European scientists during this period (with a particular focus on mathematicians), see Siegmund-Schultze (2001).

last group set out in 1921 “with the goal of purchasing equipment and scientific literature” (Kojevnikov 2004, p. 102). Amongst Ioffe’s travelling companions was the physicist P.L. Kapitsa, who subsequently worked at the Cavendish Laboratory in Cambridge from 1921 to 1934 (Kojevnikov 2004, Chap. 5). Foreign scientific visitors also found their way to Russian universities during this period.<sup>14</sup> From 1925 onwards, any such visitors were aided during their stay in the USSR by representatives of the All-Union Society for Cultural Relations with Foreign Countries (VOKS/БОКС = Всесоюзное общество культурной связи с заграницей), whose mission, carefully crafted to give the appearance that it was not under direct state control (David-Fox 2002, pp. 11, 26), was to present the Soviet Union in an entirely positive light.<sup>15</sup> This is particularly relevant for our purposes, since, as Susan Gross Solomon and Nikolai Kremmentsov have observed,

[s]cience was a major focus of VOKS’s brief: the bulletin of VOKS, issued in French, German, and English, trumpeted Soviet scientific advances.<sup>16</sup>

VOKS established links with ‘friendship societies’ overseas (David-Fox 2012, Chap. 2), including, for example, a French-Soviet rapprochement society (Stern 1997, 1999),<sup>17</sup> the National Council of American-Soviet Friendship,<sup>18</sup> and the Society for Cultural Relations between the Peoples of the British Commonwealth and the USSR (SCR),<sup>19</sup> the latter two of which had dedicated science sections.<sup>20</sup> Indeed, in the case of the SCR, the science section seems to have been one of the most active parts of the society: the initiative for certain specialised trips to the USSR came from the science section (Lygo 2013, pp. 587–588).

With regard to conferences, we can look again to Table 2.1. After the attendance of the 1920 ICM by just one Russian (in fact, an exile, D.P. Riabouchinsky, then resident in the south of France: see Villat 1921, p. xiii), Soviet involvement in the congresses began to increase. Russian scientists were also represented at foreign conferences in other disciplines: take, for example, their presence at each end of the decade at both the Tenth (Paris, 1920) and Thirteenth (Boston, 1929) International Congresses of Physiologists (Franklin 1938, pp. 293, 305), and also the First International Congress of Soil Science, held in Washington, DC, in 1927 (Deemer et al. 1928). Indeed, Soviet attendees formed the largest foreign delegation at the Fifth International Genetics Congress in Berlin in 1927 (Kremmentsov 2005, pp. 4, 19). In contrast, however, no Soviets were present at the Seventh International Congress of Psychology in Oxford in 1923 (Rosenzweig 2000, p. 44). Nevertheless, as the

<sup>14</sup>The references given in note 8 on p. 10 are again relevant here.

<sup>15</sup>See Solomon and Kremmentsov (2001, p. 287), David-Fox (2012, Chap. 1) or, for an older source, Kameneva (1928).

<sup>16</sup>Solomon and Kremmentsov (2001, p. 287); on the bulletin, see also David-Fox (2012, p. 90).

<sup>17</sup>On Soviet-French ties, see also Ivanovskaya (1976), Plaud (1980) and Fedorov (1984).

<sup>18</sup>For a quite critical history of this society, see Nemzer (1949, pp. 275–279).

<sup>19</sup>See Lygo (2013), and also King (1967) and Todd (1967).

<sup>20</sup>See Lear (1997, p. 262) or Lygo (2013, p. 584); on the American-Soviet Science Society (established in 1944), see Kremmentsov (1996, p. 240).

1920s progressed, more and more Soviet scientists were sent abroad at the expense not only of the Academy of Sciences (Medvedev 1979, p. 16), but also of a number of government ministries, such as the Ministry of Education (with jurisdiction over ‘pure’ science) and the Supreme Council of the National Economy (‘applied’ science) (Solomon and Kremmentsov 2001, pp. 275, 285–286). In their efforts to boost foreign contacts, these ministries founded special departments devoted to foreign relations, and also established networks of foreign representatives (Solomon and Kremmentsov 2001, p. 276).

In 1925, the Academy of Sciences staged an international conference to commemorate its 200th anniversary—the first international scientific meeting to be held in Russia since the start of the First World War, and a conscious attempt to re-establish scientific ties (Sorokina 2006, pp. 63, 65). The conference was attended (at Soviet expense) by many foreign scientists,<sup>21</sup> from a range of disciplines; definitive attendance figures seem to be lacking, but the number of foreign attendees could have been as high as 98 (Bateson 1925). A report of the meeting subsequently appeared in *Nature*, penned by one of the British delegates, the geneticist W. Bateson. He considered that the conference “had been organised largely with an eye to its propaganda-value” (Bateson 1925, p. 681), but his report suggests that the foreign delegates enjoyed free interaction with their Soviet colleagues. A reciprocal conference was held in London later the same year (Anon 1925). Both meetings received a very enthusiastic write-up in a book produced 50 years later (in English) by the Soviet Academy of Sciences: *USSR Academy of Sciences: Scientific Relations with Great Britain* (Korneyev 1977).<sup>22</sup> This volume records, for example, the many positive remarks that were supposedly made by British scientists concerning Soviet scientific organisation, and the USSR more generally—Western comments of a more critical type, such as those made by Bateson in his report (“Of liberty we saw no sign”: Bateson 1925, p. 683), do not appear. Indeed, this book is quite typical of the Soviet-produced sources that deal with international scientific communications, in that it omits anything that might show up the USSR in a negative light—any communications difficulties are blamed, often in a somewhat hysterical tone, on the ‘reactionary’ attitudes of Western governments. For example, an article in this volume refers to the “pronounced anti-Soviet attitude” of the “ruling clique of Britain” (Korneyev and Timofeyev 1977, p. 9),<sup>22</sup> before going on to assert the interest in all things Soviet shown by the British people at large, and by British scientists in particular, who

recognised the Soviet state much earlier than the government and who, being interested in scientific contacts as much as their Soviet colleagues, played a substantial role in breaking

<sup>21</sup>Including German delegates, at a time when German scientists were largely excluded from international meetings; see Forman (1973, p. 168). Indeed, the Germans formed the largest foreign contingent (Sorokina 2006, p. 64); for a list of countries who sent delegates, see Sorokina (2006, p. 85).

<sup>22</sup>Korneyev’s initials are given as S.C. on the title page of Korneyev (1977), but as S.G. in the article Korneyev and Timofeyev (1977). One of these sets of initials is certainly wrong, but I do not know which.

through the anti-Soviet blockade and in surmounting the psychological barrier erected by the campaign of slander which was being whipped up in Britain.<sup>23</sup>

As we will see later, there was a marked tendency amongst Soviet commentators to overstate the levels of contact that were possible, particularly in later decades.

Thus, during the 1920s (particularly in the second half of the decade), scientists on both sides of what later became the Iron Curtain appear once again to have enjoyed a level of communication comparable to that before the First World War. I have given just a few documented examples of Soviet scientists travelling to the West, and of travel in the opposite direction—a glance through the proceedings of many international conferences of the 1920s would undoubtedly uncover further instances.<sup>24</sup>

## 2.3 The 1930s

As far as the issue of international scientific communication was concerned, the 1930s had a promising start, with 14 foreign delegates present at the 1930 First All-Union Congress of Mathematicians in Kharkov, six of whom delivered talks (Anon 1936, p. 358).<sup>25</sup> However, as the decade progressed, the situation became more difficult, particularly for Soviet scientists, the principal hindrances being the increase in state control of the academic sphere, and the demand for ‘ideological orthodoxy’: that all disciplines should remodel themselves in order to become consistent with the Marxist philosophy of dialectical materialism. Science, in particular, lay in the ideologues’ sights, since its evidence-based nature made it attractive to Marxist philosophers. However, as Alexei Kojevnikov has commented:

despite their professed respect towards science, Bolsheviks with very few exceptions did not possess even basic scientific literacy and could be highly suspicious of scientists in real life. (Kojevnikov 2004, p. 280)

Nevertheless, this materialist orientation translated into an emphasis, though, it seems, a largely rhetorical one, on experimental sciences.<sup>26</sup> Thus, as the 1930s progressed, all academic disciplines, the sciences in particular, found themselves under pressure to toe the ideological line, and we see many instances of ideological interference in the sciences, the most infamous example being the influence of

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<sup>23</sup>Korneyev and Timofeyev (1977, p. 10). Similar comments in the Soviet/American context can be found in Furaev (1974). Such accusations continued to be made even until the final years of the Soviet era; see Sapsai (1984) and Medvedev (1984).

<sup>24</sup>With regard to British-Soviet scientific relations, many more examples of exchanges may be found in Korneyev and Timofeyev (1977). Other (slightly uncritical) reviews of British-Soviet relations may be found in Topchiev (1956) and Romanovsky (1967).

<sup>25</sup>See also Tokareva (2001, pp. 219–222).

<sup>26</sup>On Marxist philosophy of science, see Graham (1972), Graham (1993, Chap. 5) and Todes and Kremontsov (2010); see also the summary in Gordin et al. (2003, pp. 39–43). In the case of mathematics, see Vucinich (1999, 2000, 2002) or Hollings (2013).



Trofim Lysenko over genetics—although, as has been demonstrated, ideology was in fact used here as a weapon in a fight over institutional resources (Joravsky 1970; Medvedev 1969). Indeed, it should be noted that it was not simply a matter of ‘good’ scientists versus ‘bad’ ideologues: many scientists took the Marxist viewpoint seriously, and used it to advance their discipline (Gordin 2014), whilst others used ideology for their own ends—young scientists in particular made ideological references in their published work in order to “bolster their appeals for state support” (Todes and Krementsov 2010, p. 354). We will see further cynical use of state ideology shortly, in connection with the so-called ‘Luzin affair’.

As well as concerning themselves with the home-grown ideas of Soviet scientists, Marxist philosophers also worried about the import of ‘idealistic’ notions from the West. Increasing restrictions were therefore placed on the ability of Soviet scientists to communicate with their Western counterparts, lest they be ‘corrupted’, either politically or philosophically. Indeed, outside of some very narrow limits, international scientific communication was slowly and quite deliberately strangled; the activities of VOKS were disrupted (David-Fox 2002; David-Fox 2012, p. 91), particularly after the formation of a new body, Intourist (Ин[остранный] турист = Foreign tourist), to handle foreign visitors (David-Fox 2012, p. 175). VOKS and Intourist soon came into conflict, though both bodies were heavily affected by the subsequent purges—VOKS in particular was accused of having been too friendly in its dealings with foreigners, and too lax in its handling of foreign correspondence (David-Fox 2012, pp. 178, 193–194), and thus to have been ‘tainted’ by the ‘inappropriate’ foreign literature in its library (David-Fox 2012, p. 299). The flow of Soviet papers to Western scientific journals, which had until this point been steady and extensive (see below), largely dried up. Any scientist who still attempted to make contact with Western colleagues was regarded with suspicion, and was liable to find his- or herself accused of anything from the ideological sin of ‘philosophical idealism’ to the even more treasonable offence of being a counter-revolutionary.

One of the most high-profile episodes in this regard was the now-infamous ‘Luzin affair’ of 1936,<sup>27</sup> which saw the Moscow-based mathematician Nikolai Nikolaevich Luzin (Николай Николаевич Лузин) (1883–1950) summoned before a special commission of the Academy of Sciences on a range of spurious charges, including the accusation that he had passed off some of his students’ work as his own, and that he had sought to ‘undermine’ Soviet science by publishing his best work in foreign journals. On the last count, Luzin’s accusers probably felt that they had a wealth of evidence: of the 93 publications that are listed under Luzin’s name in the 1959 survey volume *Mathematics in the USSR after Forty Years* (*Математика в СССР за сорок лет*) (Kurosh et al. 1959, vol. 2, 420–422),<sup>28</sup> 45 were published abroad. Moreover, he had extensive foreign contacts: he had spent

<sup>27</sup>There is an enormous literature on the ‘Luzin affair’. See, for example, Demidov and Esakov (1999), Demidov and Levshin (1999), Kutateladze (2007, 2012, 2013), Levin (1990), Lorentz (2001, 2002), and Yushkevich (1989).

<sup>28</sup>For further details on this and other such survey volumes published in the USSR, see the references in note 37 on p. 68, and also Hollings (2015).

some time in Paris in 1905–1906 (Graham and Kantor 2009, pp. 80–82), and also as recently as 1928, the latter trip having been made thanks to Rockefeller funding (Siegmund-Schultze 2001, p. 295).

Almost inevitably, the Academy commission ruled against Luzin, and he was stripped of all his official positions, although the judgement against him was eventually overturned in January 2012 (Kutateladze 2013). Personal rivalries, and the possibility of career advancement for Luzin's accusers (who included several of his former students), probably had a role to play in this episode, as they did in other such attacks,<sup>29</sup> but the 'Luzin affair' nevertheless delivered a clear ideological message: that domestic publication was to be preferred. Indeed, although it did not initiate it, the 'Luzin affair' put the final seal on a trend towards domestic publication that had been underway since the beginning of the decade (Aleksandrov 1996). As an illustration of this tendency in the case of mathematics, we look again to *Mathematics in the USSR after Forty Years* and extract some data. The second volume of this survey work consists entirely of an impressive effort to list the publications, up to 1957, of every Soviet mathematician. As an illustration, let us select just three prominent figures (Luzin, P.S. Aleksandrov, and S.N. Bernstein<sup>30</sup>) and draw bar charts representing their levels of domestic and foreign publication up to 1957 (Figs. 2.1, 2.2 and 2.3).<sup>31</sup> As we see from the charts, all three had a history of extensive foreign publication prior to 1936, but then the figures drop off sharply after this date. However, we note also the fact that, as with many aspects of Soviet policy, the drive towards domestic publication was not applied consistently: foreign publication did not dry up completely—'ideologically sound' figures, such as P.S. Aleksandrov, remained able to send at least some of their work abroad.<sup>32</sup>

State suspicion of individuals with foreign contacts was not the only reason for the decline in foreign publication amongst Soviet scientists: nationalistic considerations also come into play. The 1930s saw a heightened

glorifying [of] elements of the Russian past [which] led to ignoring the achievements of non-Soviet scientists and to the isolation of Soviet sciences. (Lorentz 2002, p. 194)

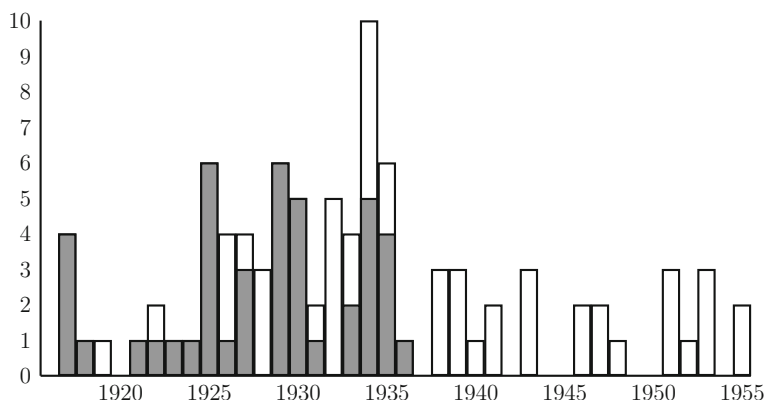
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<sup>29</sup>In connection with Luzin, see Graham and Kantor (2009, pp. 149–150), Kutateladze (2007), and Lorentz (2001). For another example of an 'ideological' attack which appears to have involved personal rivalries (namely, that on A.F. Ioffe in 1936), see Levin (1990, p. 97–8). The ambitions of younger researchers may also have played a role in the downfall of the geneticist N.I. Vavilov (Kolchinsky 2014). See also the case of the astronomer Boris Gerasimovich: Denny (1936).

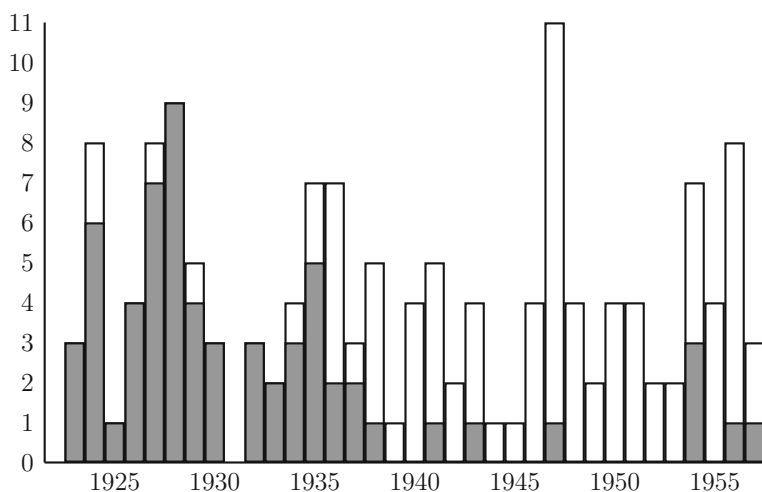
<sup>30</sup>I take Aleksandrov as an example of a figure who was regarded as 'politically sound', and Bernstein as an individual who was more often at odds with the Soviet regime (see, for example, Vucinich 2000).

<sup>31</sup>Further data of this type, for some other Soviet mathematicians, may be found in Table 2.1 in Hollings (2014, p. 18), from which Figs. 2.1, 2.2 and 2.3 were also constructed. A similar, though slightly narrower, analysis appears in Levin (1990, p. 96).

<sup>32</sup>A *Pravda* article of 9th July 1936 (quoted by Lorentz 2001, p. 205) condemned Luzin's foreign publications as "sabotage", but counted those of Aleksandrov (amongst others) as mere lapses in judgement. Thus, we see that the issue of foreign publication was merely pretext in the 'Luzin affair'.

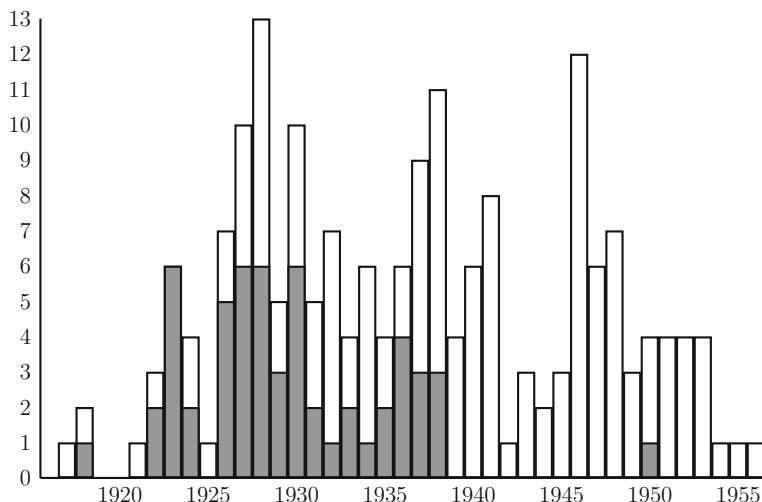


**Fig. 2.1** Number of publications of N.N. Luzin per year, as listed in the volume Kurosh et al. (1959), showing both those items published domestically (*clear*) and abroad (*shaded*)



**Fig. 2.2** Number of publications of P.S. Aleksandrov per year, as listed in the volume Kurosh et al. (1959), showing both those items published domestically (*clear*) and abroad (*shaded*)

In connection with publishing, this led to the feeling that the USSR ought to have its own world-class journals. To take another example from mathematics, let us consider an editorial entitled ‘Soviet mathematicians, support your journal!’ (‘Советские математики, поддерживайте свой журнал!’: Anon 1931) that appeared in volume 38 (1931) of the Moscow-based journal *Matematicheskii sbornik* (*Математический сборник* = *Mathematical Collection*). This editorial spoke out against the tradition, apparently prevalent amongst Soviet mathematicians,



**Fig. 2.3** Number of publications of S.N. Bernstein per year, as listed in the volume Kurosh et al. (1959), showing both those items published domestically (*clear*) and abroad (*shaded*)

“of publishing their best work in foreign journals”,<sup>33</sup> and challenged the point of view that this was necessary to increase the visibility of Soviet mathematics around the globe; the editors opined instead that

scattered throughout journals in Germany, France, Italy, America, Poland, and other bourgeois countries, Soviet mathematics does not appear as such, unable to show its own face.<sup>34</sup>

They thus set themselves the task of transforming *Matematicheskii sbornik* into a journal of world repute, and called upon all Soviet mathematicians to assist in this endeavour by submitting their work, in the first instance, to *Matematicheskii sbornik*.<sup>35</sup> Such gentle persuasion contrasts sharply with the less subtle effects of the ‘Luzin affair’. *Matematicheskii sbornik* will also prove useful for illustrative purposes when we discuss languages in Chap. 4.

To return to the issue of foreign travel, we note that it remained possible for Soviet scientists to visit other countries in the early part of the 1930s—witness, for example, the three Soviet delegates at the 1932 Zurich ICM (Table 2.1). However, as the decade advanced, the rights of Soviet citizens to travel were gradually

<sup>33</sup>“печатать свои лучшие работы в иностранных журналах” (Anon 1931).

<sup>34</sup>“рассыпанная по журналам Германии, Франции, Италии, Америки, Польши и других буржуазных стран советская математика не выступает как таковая, не может показать собственного лица” (Anon 1931).

<sup>35</sup>It is interesting to contrast this situation with that of several decades later: after the fall of the Soviet Union, Russian scientists came increasingly to the realisation that their work had a poor visibility at the international level. Their conclusion was that they ought therefore to return to the old tradition and begin once more to publish much of their work abroad (and, moreover, in English): see Kirchik et al. (2012).

curtailed, due not only to official fears that Soviet citizens would be ‘corrupted’ by foreign ideologies, but also, more simply, by the fact that some Soviet scientists who had travelled abroad had never returned (Josephson 1992, pp. 597–598)—the USSR sought to stem any further ‘brain drain’. Thus, for example, of the eleven Soviet delegates who registered to attend the 1936 ICM in Oslo, none were in fact permitted to travel (Lehto 1998, p. 69). Indeed, in the second half of the 1930s, Soviet scientists became quite conspicuous by their absence from international scientific meetings: as disparate examples, we might take the Second International Forestry Congress (Budapest, 1936: see Guthrie 1936), the Warsaw Conference on Modern Physics (1938: see Anon 1938), and the Seventh International Genetics Congress (Edinburgh, 1939: see Krementsov 2005, p. 4, or Crew 1939), none of which included any Soviet delegates; tentative plans had been made to hold the last conference on this list in Moscow in 1937, but political difficulties had caused these to fall through. Thus, Soviet scientists found themselves in what Kojevnikov has referred to as

the twenty years of Stalin’s dictatorship, when Soviet science worked in virtual international isolation, with practically no foreign travel, visits, personal communications, conferences, or correspondence, and when most contacts with the rest of the world science would be reduced to exchanges of printed works. (Kojevnikov 2004, p. 85)

Such exchanges of printed works will be considered in Chap. 3.

Although the 1930s represent a dark period in Soviet history, hardly ideal for fostering a thriving international scientific community, there was the occasional glimmer of hope. Soviet researchers may not have been able to travel abroad, but foreign scientists were still able to visit the USSR, though perhaps not as easily as they had been able to do so earlier: in contrast to the above-mentioned First All-Union Mathematical Congress of 1930, the Second All-Union Mathematical Congress (Leningrad, 1934) hosted just a single foreign delegate (Anon 1935a, vol. 1, p. 14).<sup>36</sup> From 1938, VOKS ceased to invite and host foreign visitors, concentrating instead on cultural activities abroad (David-Fox 2012, p. 305).

Many of the foreign scientific visitors to the Soviet Union during the 1930s were there for practical reasons. For example, a large number of technical specialists were invited to the USSR in order to assist in building up Soviet industry (Medvedev 1979, p. 28); according to some sources, there were, by 1932, 600 American engineers working in Soviet car and tractor plants (Byrnes 1976, p. 29; Kuznick 1987, pp. 113–114). Much as it had in the preceding decade, VOKS also hosted delegations of foreign scientists (at least until 1938), such as that which visited the Soviet Union in the Summer of 1931, and which included, amongst others, the biologist Julian Huxley<sup>37</sup>; the aim of issuing such invitations was, one would assume, to impress visitors with the rapid technical achievements of the USSR. Some individual Western scientists were also permitted to work in Russian universities: for example, the American geneticist H.J. Muller, who spent time in both Moscow and

<sup>36</sup>See also the report of that (American) delegate: Lefschetz (1934).

<sup>37</sup>See Huxley (1932); see also Kuznick (1987, p. 118).

Leningrad.<sup>38</sup> Finally, we note that the occasional international conference was held in the USSR during this period: indeed,

[t]he Soviet government lavishly funded each of these gatherings, and the Soviet press covered them at every turn.<sup>39</sup>

Plans for the above-mentioned genetics congress may have fallen through in 1937, but the USSR had nevertheless played host to the Seventeenth International Geological Congress in that year (in conjunction with a meeting of the International Paleontological Union),<sup>40</sup> and to the Fifteenth International Physiological Congress just a couple of years earlier,<sup>41</sup> as well as two international mathematical congresses around the same time: one on vector and tensor analysis in 1934 (Anon 1934, p. 648), and another on topology in 1935 (G.B 1935).. Details on the former are lacking, but it does appear to have attracted delegates from Austria, Czechoslovakia, France, Germany, Italy, the Netherlands, and Poland. The topological congress, on the other hand, was a much larger affair; it has been described as “the first truly international conference in a specialized part of mathematics” (Whitney 1989, p. 97). The proceedings of this congress were published in volume 1(43) (1936) of *Matematicheskii sbornik*, from which we see that delegates hailed from Czechoslovakia, Denmark, France, Germany, the Netherlands, Norway, Poland, Switzerland, and the USA.<sup>42</sup>

## 2.4 The Second World War

The partnership between the USSR and the other Allied nations during the Second World War, at least after the Soviet Union’s entry into the conflict in 1941, was attended, as one might expect, by an enhanced spirit of cooperation.<sup>43</sup> Efforts to connect with, and, indeed, to understand, the peoples on the opposite side of what was to become the Iron Curtain were stepped up in all walks of life, not least in the sciences. However, many such efforts appear to have been offset by new barriers to intercourse: not now (necessarily) the difficulties created by Soviet policy, but the more general problems of wartime communication. Thus, despite a cooperative desire on both sides to exchange material, little contact of practical value appears to have been achieved.<sup>44</sup> Instead, we find many rhetorical statements of solidarity

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<sup>38</sup>See Kuznick (1987, pp. 119–125), and also Carlson (1981, 2011).

<sup>39</sup>Doel et al. (2005, p. 59). See this source also for other examples of international congresses held in the USSR during the 1930s.

<sup>40</sup>See Kremmentsov (2005, p. 8), and also Gordon (1937) and Case et al. (1938).

<sup>41</sup>See Franklin (1938, pp. 314–320) and Kuznick (1987, pp.153–162); see also Anon (1935b) and Ivy (1935).

<sup>42</sup>For reports of the congress from both sides of the East/West divide, see Aleksandrov (1936) and Tucker (1935).

<sup>43</sup>Indeed, prior to this, there had been greater cultural ties between the USSR and Nazi Germany, during the years of the Molotov–Ribbentrop Pact; see David-Fox (2012, p. 310–311).

<sup>44</sup>I am confining my attention here to ‘civilian science’—the type of science found in freely published papers, and also the type that we have been concerned with implicitly from the start of this

and cooperation, such as that signed by 93 American mathematicians in 1941, and delivered to the Soviet embassy in Washington. In this message, which was subsequently printed in both *Science* and *Nature*, the mathematicians sent their “greetings and . . . heartfelt sympathy to [their] colleagues of the Soviet Union in their struggle against Hitler fascism [*sic*]” (Anon 1941a), before going on to remark that

[t]he bonds between mathematicians in the United States and the Soviet Union are particularly strong since during the past two decades the center of world mathematics has steadily shifted to these two countries. We know many of you personally and more of you through your scientific writings. (Anon 1941a)

The mention of ‘particularly strong’ bonds here is perhaps a little questionable. Nevertheless, we find the same high-flown language in a response, signed by 64 Soviet mathematicians, sent some weeks later:

Your splendid message, dear colleagues, found wide response in the hearts of the scientists of our country. We read it with feelings of all the more appreciation and satisfaction in that it again emphasized the community of thought and the friendly ties between the mathematicians of the U.S.A. and the U.S.S.R. Many years we jointly worked with you on the development of our science, many of our American colleagues were our welcomed guests, while with a still greater number of American scientists we conduct friendly scientific correspondence. This mutual co-operation was very fruitful and led to a number of important scientific discoveries. (Anon 1941b)

Similar statements of wartime scientific solidarity were exchanged, for example, by the Linnean Society and the Moscow Society of Naturalists (Anon 1942f), by the American Association of Scientific Workers and the Soviet Scientists’ Antifascist Committee (Anon 1943a), and by the Royal Society and the Soviet Academy of Sciences.<sup>45</sup> In connection with the latter, hopes were raised that the exchange of scientific information might be improved, but it is unclear whether anything of practical value was ever achieved in this regard.<sup>46</sup> For further expressions of solidarity, we may also look to the comments concerning British and Soviet scientists that appear in the proceedings of a symposium on Soviet science that was held at Marx House in London at Easter 1942.<sup>47</sup> However, since this conference was held under the auspices of a Marxist organisation, these remarks are of a rather more political and propagandistic tenor than those found in other places; the proceedings also include (in English) appeals made by the Soviet Academy of Sciences which exhort foreign colleagues to aid in the fight to “wipe the brown pestilence of Fascism from the face of the earth” (Anon 1942h, p. 31).

Communications of a slightly more practical nature did occasionally slip through the surrounding rhetoric. These included, for example, book-length surveys of Soviet science, which, unsurprisingly, focused on those aspects of Russian work

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(Footnote 44 continued)

book. The exchange of military technology and of secret materials is not something that I attempt to cover here—see instead, for example, Beardsley (1977) and Avery (1993).

<sup>45</sup>There is a wide range of letters to cite in this instance: see, for example, Anon (1941c, 1942d, 1943c); see also Korneyev and Timofeyev (1977, p. 34).

<sup>46</sup>See Anon (1942a, e, g).

<sup>47</sup>See Anon (1942h), and also Anon (1942b, c).

that were then aiding the war effort.<sup>48</sup> In addition, we find, in Western general science journals, various survey articles, by both Western and Soviet authors, detailing the current status of, or recent progress in, specific disciplines within the Soviet Union: take, for example, those on mathematics (Vinogradov 1942), astronomy (Anon 1943b), botany (Shishkin 1943), biology (Dunn 1944), and physics (Joffe 1945), as well as a considerably longer one covering chemistry, physics, metallurgy, radio telegraphy, and aeronautics (Ipatieff 1943). In the opposite direction, the Soviet Academy of Sciences published summaries of Western (mostly British and American) scientific works (Krementsov 1996, p. 234).

Around this time, communications of a similar type were taking place also via the British-sponsored journals *Британский союзник* (*Britanskii soyuznik* = *British Ally*) and *Британская хроника* (*Britanskaya khronika* = *British Chronicle*), which had been founded in the wake of the Soviet-British Treaty of 1942 to provide the Soviet people with a window onto British life. As an uncensored account of a part of the world beyond the Soviet border, *Britanskii soyuznik* proved very popular within the USSR, and eventually inspired a glossier, though more overtly propagandistic, American counterpart *Америка* (*Amerika*) (Byrnes 1976, pp. 30–31). However, although these journals covered a range of subjects, including science and technology, their contents, which focus on how science was aiding the war effort,<sup>49</sup> appear to have been too superficial to have contributed much to international scientific communication.<sup>50</sup> The same can also be said of *Britanskii soyuznik*'s counterpart, *Soviet War News*, which was published daily by the Press Department of the Soviet embassy in London between 1941 and 1945. Again, this newspaper sought to inform the British public about Soviet life in general, and was taken up very largely by the requisite expressions of solidarity, and by accounts of how the Soviet people (including scientists<sup>51</sup>) were working to combat the fascist threat. Perhaps as a reflection of the supposed importance of science to Soviet thinking, *Soviet War News* appears to have featured more articles of a scientific nature than *Britanskii soyuznik*, but they were no less superficial.<sup>52</sup> Thus, although they contained very little scientific information, these journals, along with the sporadic survey articles mentioned above, must have gone at least some way towards informing the scientists on one side of the divide about what those on the other side were doing, even if they did little to increase the scope for personal communication between scientists in East and West.

It should be noted, however, that there was one group of scientists who did in fact manage to set up strong lines of communications between East and West during the war, namely those working in medicine. Cooperation in medical matters was of course born of the importance of such researches to the war effort, and also perhaps of a Western perception that the Soviet Union was making great strides in

<sup>48</sup>See, for example, Needham and Davies (1942) or Anon (1944).

<sup>49</sup>See, for example, Bernal (1944) and de Andrada (1944).

<sup>50</sup>See Johnston (2011, pp. 86–87) or Pechatnov (1998).

<sup>51</sup>See, for example, Anon (1941d, f, h, i), and Frumkin (1941).

<sup>52</sup>See, for example, Anon (1941e, 1945e), Rostov (1945), and Zhukovsky (1945).



medical matters<sup>53</sup>; the result was the exchange of medical research much more generally. Upon the USSR's entry into the war, an Anglo-Soviet Medical Committee was formed in London, with the goal of obtaining information on Soviet medical techniques, and of sending similar details about British advances to the USSR.<sup>54</sup> The Soviet ambassador was approached in connection with the former, and appeals went out for volunteers, not only to translate Russian medical materials into English, but also to prepare a Russian translation of a volume entitled *Reviews of British War Medicine*; upon completion, the latter translation was presented to the wife of the Soviet ambassador in November 1942 (Anon 1942j). Copies of *The Lancet* and of *The British Medical Journal* were also dispatched to Russia (Anon 1941k), along with issues of the wartime journal *Bulletin of War Medicine*; copies of Russian materials were received in turn. Other activities of the Anglo-Soviet Medical Committee included the sending of spare surgical equipment to the USSR (Webb-Johnson 1941), and the facilitation of exchanges of British and Soviet medical personnel; reports of trips to the USSR, featuring details of Soviet medical advances, thus began to appear in British (more generally, Western) publications<sup>55</sup>—such reports (in a more general setting) will feature again in Sect. 3.5.

Across the Atlantic, perhaps following the British example, an American-Soviet Medical Society emerged in 1943.<sup>56</sup> The goals of the American society were broadly similar to those of the British one: to promote medical links with the USSR, and to facilitate the exchange both of printed materials and of personnel—evidence that this did indeed take place on a significant scale is found in the number of foreign letters processed by a revived VOKS (Krementsov 1996, p. 233–234). In connection with information exchange, the society built up an extensive library of Soviet medical texts (Lear 1997, p. 270), whilst in the case of exchange of personnel, it arranged lectures by US medical researchers who had just returned from the USSR, and also by Soviet visitors (Lear 1997, pp. 270–274). The main activity of the American-Soviet Medical Society, however, was the publication of a journal, *The American Review of Soviet Medicine*, which carried English translations of major Russian articles, and abstracts of others, along with surveys of specific branches of Soviet medicine.<sup>57</sup> A foreword to the first issue noted that “[t]he medical profession is the world's greatest fraternity”, and proudly asserted that “[i]n medical research, . . . no artificial barriers between nations are recognized” (Cannon 1943, p. 5). Moreover, an editorial in the same issue expressed the hope “that [*The Review*] will become a permanent link between the medical corps of our two great countries” (H.E.S 1943). Indeed, throughout the remaining years of the war, *The American Review of Soviet Medicine* continued to be a steady connection between the medical researchers of the USSR and the USA, and in the few years following the war, the American-Soviet

<sup>53</sup>See Carling (1944) or Lear (1997, pp. 259–260).

<sup>54</sup>See Anon (1941g, j, 1942i), Dawson et al. (1941a, b), and Bunbury (1942).

<sup>55</sup>See, for example, Watson-Jones (1943a, b) and Hastings and Shimkin (1946). On UK-USSR medical exchanges in later decades, see Rich (1975).

<sup>56</sup>See Lear (1997) or Krementsov (2007, pp. 44–48).

<sup>57</sup>See Lear (1997, pp. 267–270) or Kerber (2012).

Medical Society aided in the restocking of Soviet medical libraries by sending regular shipments of American materials (Lear 1997, p. 271), but its activities soon petered out in an unfavourable post-war climate.

## 2.5 After the War

As is well documented, the spirit of wartime unity between the USSR and the other Allies quickly dissolved in the wake of the defeat of Nazi Germany, the Iron Curtain descended, and the path into the Cold War was set. Scientific contacts during the war, if somewhat limited, had nevertheless led many scientists to believe that a new era of post-war cooperation would begin, but it was not to be. This was due, in very large measure, to a return to the form of the 1930s in connection with Soviet policy. As Loren Graham has commented:

[a]fter the Second World War many intellectuals in the Soviet Union hoped for a relaxation of the system of controls that had been developed during the strenuous industrialization and military mobilizations. Instead, there followed the darkest period of state interference in artistic and scientific realms. (Graham 1972, p. 18)

Indeed, Soviet scientists were not alone in their initial hopes that international contacts might be strengthened: efforts were made by US agencies not only to establish a student exchange programme between the USA and the USSR, but also, in 1945, to instigate a Rhodes-type scholarship (Byrnes 1976, pp. 31–33)—educational exchange generally, and that of science education in particular, was seen by some as a route to international understanding.<sup>58</sup> These endeavours, however, came to nought, for this was the era of *zhdanovshchina* (ждановщина)—named for Stalin’s chief ideologist A.A. Zhdanov, this was the post-war Soviet policy whereby the Western influences that had crept into Soviet life during wartime cooperation were to be purged, and ‘cultural purity’ was to be promoted. In this climate the journals *Britanskii soyuznik* and *Amerika* came to be regarded by the Soviet authorities with greater suspicion, and were lumped together with the more blatant Western (particularly American) propaganda. Moreover, the fact that both journals were often mistaken by the Soviet populace for domestic publications lent them an insidious air. Their days were numbered when V.S. Abakumov, the Soviet Minister of State Security, wrote to both Stalin and Zhdanov to express his concerns (Levering 2002, pp. 165–166). Both journals had ceased publication by the end of the 1940s. The rapidly descending Iron Curtain also impacted Western publications: the renewed difficulties of obtaining Russian manuscripts, coupled with the increasing anti-communist feeling in the USA, meant that the October 1948 issue of *The American Review of Soviet Medicine* was its last.<sup>59</sup> It should be noted, however, that the cessation of the publication of *The American Review of Soviet Medi-*

<sup>58</sup>See, for example, Oakes (1946) and Bu (1999).

<sup>59</sup>See Lear (1997, pp. 274–276), Sigerist (1948) or Anon (1948). Interestingly, however, other similar journals were being launched elsewhere around this time: the Spanish-language

*cine*, and, more generally, of the activities of the American-Soviet Medical Society, was not due solely to political pressures from above, but also to a dwindling interest on the part of former subscribers: an editorial in one of the last issues of the journal expressed disappointment at the waning enthusiasm for the journal and for the society amongst US doctors now that the USSR was no longer a comrade-at-arms and was in fact becoming increasingly unpopular in the American press (Sigerist 1948, p. 7).

Immediate post-war prospects for renewed scientific exchange between East and West had in fact seemed quite promising, with the invitation of many foreign delegates (apparently at Stalin's suggestion: see Kremmentsov 2007, p. 46) to the celebration of the 220th anniversary of the Russian Academy of Sciences in Moscow and Leningrad in June 1945,<sup>60</sup> and the appearance of small Soviet delegations at the conference 'Science in Peace', held in London in the February of the same year (Anon 1945c), at the Royal Society's Newton Tercentenary Celebrations in July 1946,<sup>61</sup> and at the Seventeenth International Congress of Physiological Sciences in Oxford in 1947 (Fenn et al. 1968, pp. 24–30). However, events were soon overtaken by the principles of 'zhdanovshchina', and, in 1947, a new Soviet law was passed, which decreed that no individual or organisation could make contact with foreigners without the express permission either of the Ministry of Foreign Affairs or of the Ministry of Foreign Trade (Byrnes 1976, p. 32). Moreover, Soviet delegations sent to foreign conferences were given strict instructions, handed down directly from the Central Committee, on how exactly to behave (Kremmentsov 2007, pp. 60–61). International scientific contacts were thus by no means impossible, but they certainly remained difficult. Even those scientists who were permitted to publish some of their work abroad (in particular, in the West) found themselves under attack: an article in *Pravda* in mid-1947 criticised a number of such scientists for their supposed 'unpatriotic acts' and 'servility to the West' (Gerovitch 2002, p. 15). The infamous 'honour trial' of the biomedical researchers G.I. Roskin and N.G. Klyueva, at which identical accusations were made, also took place in 1947 (Kremmentsov 2002, pp. 109–133). Another example is provided by the attack on the geneticist A.R. Zhebrak, which took place the same year, and again centred upon accusations of 'servility to the West'.<sup>62</sup> During this period, ideology once again became the basis for assaults on science and scientists; take, for example, the group of Leningrad-

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(Footnote 59 continued)

*Revista cubana de medicina sovietica*, for example, was founded in 1945, whilst the French *Cahiers de médecine soviétique* ran from 1953 to 1957; see Kerber (2012, pp. 233–234). The French journal can perhaps be seen as a successor to an earlier Soviet-French medical copublication: see Ivanovskaya (1976, pp. 201–202).

<sup>60</sup>See Kremmentsov (1996, p. 237), Kremmentsov (2002, pp. 75–78) or Anon (1945a, b, d); see also Korneyev and Timofeyev (1977, pp. 38–39). *Soviet War News* had much to say about this conference, its international character in particular; see, for example, Anon (1945f, g, h, i).

<sup>61</sup>See Dale (1946, p. 157); see also Korneyev and Timofeyev (1977, p. 40).

<sup>62</sup>See Kremmentsov (2005, p. 142). Zhebrak's publication of an article in *Science* (Zhebrak 1945) was, for example, held against him. See also the comments of Medvedev (1979, p. 119), not only on Zhebrak, but also on Roskin and Klyueva.

based mathematicians who came under fire in 1949 for their supposedly ‘idealistic’ research pursuits.<sup>63</sup>

By and large, the Western follow-up to wartime contacts, at least during the late 1940s, could not have been more different from the official Soviet line: sitting in contrast to Stalinist concerns about ‘cultural contamination’ was a piqued Western curiosity about all things Soviet—or at least an uneasy feeling that Westerners ought to know more about the USSR. In its early stages, this renewed interest manifested itself in concerns about the provision of resources for academic research in Soviet, Russian, Slavonic and/or Eastern European studies: witness for example the report commissioned by the UK’s Foreign Office, in which we find the following statement of motivation:

The comradeship of the war and the supreme importance of continuing that comradeship in the future furnish the strongest reasons for developing in Great Britain sound and accurate knowledge of the Soviet Union and the Russian way of life. In the inter-war period political conditions were unfavourable to the spread of accurate knowledge about the Soviet Union and there is much leeway to be made up. (Foreign Office 1947, p. 26)

The report’s authors asserted that there was then

clear evidence of a strong desire in [the UK] to learn more about the Soviet Union and we have been informed that a corresponding desire exists in the Soviet Union and that much attention is given in that country to the study of Great Britain and the British Empire. (Foreign Office 1947, p. 26)

The report thus set out to survey the then-current status of Russian studies within British universities, and to make recommendations for improvement. We find therein, for example, a recognition of the fact that “[o]f the large amount of scientific work” produced by the Soviet Union (amongst other countries),

a substantial proportion is not available to scientists in [the UK] on account of the barrier of language. (Foreign Office 1947, p. 33)

The provision of more translators is therefore one of the report’s recommendations. The issue of language is one to which we will return in Chap. 4. Concern over Slavonic and related studies, including the language problem, was also felt elsewhere in Western Europe: in France, for example (Mazon 1946; Hilton 1979).

I have not yet come across any report of similar scope relating to US academia,<sup>64</sup> but one American reviewer of the British report opined that its findings were “no less true for the United States” (Frye 1947, p. 333)—that general US understanding of the USSR was not yet adequate. Indeed, this appears to have been recognised in the United States as early as 1941, for this was the year in which the journal *The Russian Review* was launched; in the foreword to the first issue, we find the sentiment that

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<sup>63</sup>See Gerovitch (2002, pp. 34–35) and Hollings (2012).

<sup>64</sup>The closest I have come is a state-by-state directory of the Russian culture and language courses offered by US higher educational institutions: Coleman (1948). See also Strakhovsky (1947). Much more generally, a US State Department report of 1950, *Science and Foreign Relations*, stressed that awareness of foreign scientific developments was crucial to the progress of US science; see Krige (2006, p. 166).

Russia is much less known to Americans than its size, its political importance, and its contributions to culture would warrant. (Chamberlin 1941, p. 1)

The journal continues to this day, with one online archive describing it as

a multi-disciplinary academic journal devoted to the history, literature, culture, fine arts, cinema, society, and politics of the peoples of the former Russian Empire and former Soviet Union.<sup>65</sup>

Historically, the journal has also carried articles on Soviet science, some of which are cited in the present book. Over the following decades, *The Russian Review* was joined by a number of other journals devoted specifically to Soviet culture—I will say a little about these in Sect. 3.5, in which we will consider, more generally, the many surveys of Soviet science that were subsequently produced for Western readers.

## 2.6 The Post-Stalin Period

Stalin's death in 1953 led to dramatic changes in almost all aspects of Soviet life, as the (slightly) more liberal atmosphere of Khrushchev's 'thaw' took effect. Despite some notable exceptions (Lysenkoism in particular), the application of state ideology to the sciences became rather less dogmatic. Certainly, those sciences in which Soviet researchers enjoyed a prominent presence on the world scientific stage (mathematics, for example<sup>66</sup>) found themselves in a much more secure position: patriotic pride outweighed philosophical considerations. Nevertheless, state ideology had not gone away, and Soviet scientists (those who did not attempt to put ideology to cynical use) were required at least to acknowledge it.<sup>67</sup> Others were able to employ ideological language for their own ends.<sup>68</sup>

Khrushchev's thaw also introduced more scope for international scientific communication, with the replacement of the now largely defunct VOKS by the new Union of Soviet Societies of Friendship and Cultural Relations with Foreign Countries (Союз советских обществ дружбы и культурных связей с зарубежными странами) (Smith 2012, p. 548). Slava Gerovitch has commented that

Soviet scholars could now publish abroad, attend international conferences, receive foreign literature, and invite their foreign colleagues to visit. The division into 'socialist' and 'capitalist' science no longer held; claims were made for the universality of science across political borders. (Gerovitch 2002, p. 155)

<sup>65</sup><http://www.jstor.org/action/showPublication?journalCode=russianreview> (last accessed 26th May 2015).

<sup>66</sup>On the international standing of Soviet mathematics, see Graham (1993, pp. 213–220) or Dalmedico (1997).

<sup>67</sup>In the case of mathematics, for example, see Vucinich (2002).

<sup>68</sup>Indeed, this matter is the main theme of Gerovitch (2002).

In some regards, the Soviet authorities may even have sought to *encourage* international scientific cooperation, probably with a view to catching up with the West in those disciplines in which Soviet research was perceived to lag behind (Medvedev 1979, Chap. 6). Some commentators have indeed given this as one of the USSR's major motivations for engaging in academic exchanges, citing the prominence of Soviet scientists in the cultural exchanges that followed Stalin's death (Byrnes 1976, p. 73). In this connection, Gerovitch has written on the shift in the official Soviet attitude towards Western science from 'criticise and destroy' to 'overtake and surpass' (Gerovitch 2002, pp. 18–21, Chap. 4), and has remarked further upon the

detailed instructions [that were issued by the Presidium of the Academy of Sciences] on how to obtain the permission for a foreign trip, how to invite foreign colleagues, how to obtain the permission to publish an article abroad, and how to maintain correspondence with foreign scholars and scientific institutions. Restrictive as they were, these instructions nevertheless legitimized what had been unthinkable in the late Stalinist period: regular contacts and exchanges between Soviet scientists and their Western colleagues. (Gerovitch 2002, pp. 156–157)

Nevertheless, although procedures were in place to enable international communication, these did not always run smoothly, as we shall see: the Soviet physicist R.Z. Sagdeev noted that, in terms of the ease of obtaining it, "permission to take foreign trips was almost a ticket to outer space" (Sagdeev 1994, p. 137).

One of the first formal agreements on academic exchange between a Western nation and the USSR was that devised in 1959 by the American Council of Learned Societies and the Soviet Academy of Sciences.<sup>69</sup> The first exchange under this agreement took place in 1961 when a group of four US academics (a Pushkin scholar, an archaeologist, an economist, and a historian) travelled to the USSR; a reciprocal visit by three Soviet economists and a historian was arranged the following year (Anon 1962a). In the decades that followed, many hundreds of scientists travelled between the United States and the Soviet Union, and vice versa, sponsored by their respective academies of sciences (Schweitzer 1989, p. 171). The exchange agreement was continually modified and added to over the years,<sup>70</sup> and gave the opportunity, for example, for US students to enrol in Soviet universities, and for Soviet professors to lecture in the USA (Schweitzer 2004, p. 2). Indeed, the establishment of procedures for formal collaboration enabled exchanges to take place in disciplines which had hitherto seen little peacetime East-West cooperation, such as medicine.<sup>71</sup> From the late 1950s onwards, the general scientific literature contains many examples of Western scientists visiting the USSR, and of Soviet scientists making the opposite trip; a particularly historic example of the latter was the visit to the USA made by four non-Lysenkoist Soviet geneticists, two years after Lysenko's removal from the Soviet Institute of Genetics (Langer 1967). Moreover, science-

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<sup>69</sup>See Schweitzer (2004, Chap. 1); the text of the formal agreement is reproduced in Schweitzer's Appendix B.

<sup>70</sup>See, for example, Anon (1963a, 1972a).

<sup>71</sup>On US-USSR cooperation in medicine, see Raymond (1973); on UK-USSR cooperation, see Rich (1974).

related scholarly exchanges were not merely the preserve of ‘pure’ scientists: witness, for example, a visit to the USSR by a delegation from the Federation of British Industries (Anon 1963c), and also that undertaken by a group of science librarians (Francis 1963).

Aside from the altruistic motivation of cooperating with ‘the other side’ in order to contribute to scientific advancement, other reasons for academic exchange were at play. As I have already indicated, the Soviet authorities had a view to using these exchanges to catch up with the West, most particularly in technological terms. Indeed, the USSR did, on occasion, attempt to abuse the exchange programmes for military gain (Schweitzer 1989, p. 194). The chance to earn recognition on the world scientific stage may also have played a part (Schweitzer 2004, p. vii). On the other hand, remaining fears about ‘philosophical contamination’ were joined by renewed concerns that free travel to the West might result in the ‘brain drain’ of Soviet science.<sup>72</sup>

In the USA, the possibility of scientific exchange with the USSR was not always greeted with enthusiasm (Byrnes 1976, p. 74), possibly because it was felt by some that Soviet science had nothing to offer—we will encounter this attitude again in Sect. 4.5 in connection with the translation of Soviet scientific works. There was a fear that Soviet scientific visitors were simply

going round the United States like vacuum cleaners sucking up all kinds of scientific information and technical know-how, (Richmond 2003, p. 66)

and offering little in return. In general, however, a more open attitude to exchange prevailed, perhaps since such contacts were seen by many not only as a means of acquiring information, but also as a starting point for greater cultural contacts, since it was felt that

[a]s a group, the scientists of the USSR are more open to considering ideas from abroad than are many other segments of the society. (Schweitzer 1989, p. 145)

A rather more blunt way of expressing US intentions would be to say that they were political and ideological in nature:

to develop, within the framework of détente, patterns of cooperation and interdependence that would lead to shared interests and more moderate behavior on the part of the Soviet Union. (Richmond 2003, p. 69)

Indeed, as in earlier decades (see Sect. 2.2), scientific exchange served as a stealthy route to increased US influence—the view under the Eisenhower administration (1953–1960) was that

increased international collaboration would strengthen the Free World, ease Cold War tensions, and promote the growth of science.<sup>73</sup>

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<sup>72</sup>See Schweitzer (2004, p. 7) or Medvedev (1971, pp. 155–161).

<sup>73</sup>Hamblin (2000a, p. 393). On this subject, see also Wolfe (2013). For similar attitudes in a different context, see Wang (1999). On the use of science in US foreign policy more generally, see Miller (2006).



In a slightly broader setting, NATO also sought to strengthen Western science by promoting international collaboration (Krige 2000). The ultimate effects of such ‘back door diplomacy’ may indeed have been dramatic—see Sect. 2.9. It should be noted, however, that people in the USSR were not blind to US intentions: the Soviet ‘Americanologist’ G.A. Arbatov noted in 1969 that “[u]nderlying U.S. policy is the so-called ‘erosion’ of our social system”.<sup>74</sup> Arbatov was, in general, in favour of cultural exchanges for the benefits that they would bring, but warned that the USSR should not lose sight of the USA’s motivations. Indeed, it was perhaps in recognition of ulterior motives that the USSR had stopped accepting Rockefeller funding in 1933 (Krementsov 2005, p. 7, 42).

Viewed as foreign aid, scientific exchange became something that the USA could use as a bargaining chip, to be withheld until progress was made in other areas, such as human rights.<sup>75</sup> Exchange programmes also broke down at times for political reasons: US-Soviet scientific collaboration experienced a lull in 1967–8, for example, owing to various factors, including the ongoing Vietnam War and the Soviet invasion of Czechoslovakia (Byrnes 1976, pp. 47–48). Nevertheless, the decades following Stalin’s death saw the organisation of exchanges and bilateral workshops in a vast range of areas (Schweitzer 1989, p. 165). Some small amount of cooperation even took place in space.<sup>76</sup>

Naturally, the United States was not the only Western nation to enjoy scientific exchanges with the USSR. Canada, Australia, France, West Germany, Belgium and Norway certainly had exchange programmes,<sup>77</sup> as did the UK, where the Royal Society organised exchanges with the Soviet Academy of Sciences.<sup>78</sup> Nuclear energy appears to have featured heavily in Soviet-French exchanges,<sup>79</sup> although other areas were also represented.<sup>80</sup> With regard to Soviet-British scientific relations, we have the volume, Korneyev (1977), mentioned in Sect. 2.2, which, if one looks past the melodramatic language that is sometimes used (“the imperialist forces have on many occasions attempted to stifle the Soviet state”: Korneyev and Timofeyev 1977, p. 9), does appear to be factually accurate where specific examples of scientific exchange are given—both the 1925 and 1945 Academy of Sciences anniversary conferences appear, for example. Elsewhere (Korneyev 1977, pp. 295–319), we find samples of the “vast and varied” correspondence between British and

<sup>74</sup>Quoted in Richmond (2003, p. 18).

<sup>75</sup>See Schweitzer (2004, p. 8). Indeed, such behaviour was nothing new: German scientists had attempted to exert some influence over the trials of suspected German terrorists in the USSR by threatening to boycott the 1925 conference to celebrate the 200th anniversary of the Russian Academy of Sciences; see Forman (1973, p. 168). In the later US-Soviet context, the treatment of both dissidents and refusenik scientists became a major reason for postponing exchanges; see, for example, Rich (1979), Anon (1980), and Lubrano (1981).

<sup>76</sup>See Greenberg (1962) and Harvey and Ciccioritti (1974). On cooperation in later decades, see Edelson and Townsend (1989).

<sup>77</sup>See Byrnes (1976, p. 64), Richmond (2003, p. 15) or Nygren (1980).

<sup>78</sup>See Smith (2012, p. 550); see also the references in note 24 on p. 14.

<sup>79</sup>See, for example, Zavyalskii (1973), Kirillov (1977), Semenov (1979), and Isaev (1979).

<sup>80</sup>See, for example, Novikov (1973) and Aver’yanov and Korotkevich (1978).



Soviet scientists during the years 1955–1961, which, in the rather curious phrase of the book, “followed the decline of the ‘cold war’” (Korneyev 1977, p. 295). One particular criticism to make of this volume, however, is that it presents the growth in scientific communication between the UK and the USSR as a uniform trend, rather than the halting process that other sources show it to be.

In this period, Soviet scientists were again beginning to appear at international conferences. We see from Table 2.1, for example, that, after an absence of roughly 20 years, Soviet mathematicians began once again to attend the ICMs, starting with the Amsterdam congress of 1954. Also in 1954, five Soviet delegates appeared at the Fourteenth International Congress of Psychology in Montreal, after a similarly long absence (Rosenzweig 2000, p. 74). In the following year, the USSR sent the third largest delegation (after the USA’s and the UK’s) to the Geneva International Conference on the Peaceful Uses of Atomic Energy,<sup>81</sup> whilst around 20 Soviet astronomers attended the Ninth General Assembly of the International Astronomical Union (IAU) in Dublin (Redman 1955), although, curiously, Soviet participation in the activities of the IAU do not appear to have dried up to quite the same extent as those in other disciplines. Indeed, for many years, the IAU was the only international scientific organisation of which the USSR was a member, having joined in 1935.<sup>82</sup> In contrast, the Soviet Union did not, for example, join the International Union of Physiological Sciences until 1953 (Fenn et al. 1968, p. 99), the ICSU (p. 11) until 1954 (Lehto 1998, p. 123), or the International Mathematical Union until 1957 (Lehto 1998, p. 122). With regard to astronomy, Soviet delegates to the IAU were proposing, as early as 1946, to stage a General Assembly in the USSR. However, concerns about official Soviet ideological condemnations of Western science, amongst other factors, prompted the IAU’s executive committee to decline several such invitations in the late 1940s and early 1950s.<sup>83</sup> Nevertheless, several foreign astronomers were able to attend the reopening of the Pulkovo Observatory near Leningrad in 1954 (Anon 1954), and the IAU eventually held its Tenth General Assembly in Moscow in 1958, which was attended by delegates from 38 different countries (Blaauw 1994, Sects. 8.1–8.m). Conversely, a large Soviet delegation was able to attend the Eleventh General Assembly in Berkeley, California, three years later (Blaauw 1994, Sect. 10.d). To turn to other disciplines, we find, for example, that a number of foreign delegates attended the Moscow conferences on high-energy physics in 1956 (Pickavance and Skyrme 1956), and on oncology in 1962,<sup>84</sup> whilst Soviet delegates were present at a range of international scientific conferences throughout the 1950s, particularly in the second half: take, for instance, those on the effects of nuclear weapons (London, 1955), genetics (Tokyo and Kyoto, 1956), astronautics (Rome, 1956), radioisotopes (Paris, 1957), oceanography (New York

<sup>81</sup>See Krige (2006, pp. 174–180) or Schroeder-Gudehus (2012, pp. 31–32).

<sup>82</sup>See Struve (1953) or Blaauw (1994, p. 113).

<sup>83</sup>See Blaauw (1994, Sect. 8.d) or Doel et al. (2005, p. 67).

<sup>84</sup>See Kremmentsov (2002, p. 204) or Anon (1962b).

City, 1959), and physiology (Buenos Aires, 1959).<sup>85</sup> Moreover, this trend continued into the 1960s, with Soviet delegates in attendance of international conferences on space science (Washington, DC, 1962), biochemistry (New York City, 1964), and physiology (Tokyo, 1964), to name but a few.<sup>86</sup> One complication that should be noted, however, in connection with Soviet attendance of foreign conferences was the occasional insistence by Soviet delegates upon delivering their lectures in Russian, necessitating the use of an interpreter, even when the speaker was fluent in a more widely understood language, such as German, French or English.<sup>87</sup> The language issue will be treated in more detail in Chap. 4.

Thus, as the 1960s advanced, scientific exchanges between East and West were certainly on the increase. However, these were not without their difficulties, particularly on the Soviet side. To put things in a nutshell, the procedures established by the USSR supposedly to enable its scholars to communicate with, or even to travel to meet, counterparts of other nations, were generally hindered, often quite severely, by bureaucracy, and by the cynical use of bureaucracy. A quite comprehensive treatment of the difficulties encountered by a scientist who attempted to use this system may be found in the writings of the biologist (and later dissident) Zh.A. Medvedev, to which we now turn.

## 2.7 The Experiences of Zhores A. Medvedev

The treatment of Zhores Aleksandrovich Medvedev (Жорес Александрович Медведев) at the hands of the Soviet authorities, owing to his critique of science practice within the USSR, became something of a *cause célèbre* within international science during the late 1960s and early 1970s. Medvedev was born in Tbilisi in 1925. Following the Second World War, he forged a career as a biologist, with a particular interest in gerontology. From 1963, he worked at the Institute of Medical Radiology in Obninsk, but was dismissed from this position upon the publication in the USA of his book on Lysenkoism (Medvedev 1969). Shortly thereafter, he was arrested and detained in a psychiatric institution on account of the further publication, this time in the UK, of the texts that will be of interest to us below, although he was released following the objections of several prominent Soviet scientists (Anon 1970a, b). In 1971, Medvedev took a position at the Institute of Physiology and Biochemistry of Farm Animals in Borovsk, but soon after departed for London to take up a one-year visiting research post at the National Institute for Medical Research (Anon 1972c, 1973a). Whilst there, however, he was stripped of his Soviet

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<sup>85</sup>See, respectively: Hodgson (1955), Waddington (1956), Nonweiler (1956), Seligman and Russell (1957), Deacon (1959), and Houssay (1968).

<sup>86</sup>See, respectively: Dyer (1962), Anon (1964), and Kato (1968).

<sup>87</sup>See, for example, Kline (1952, p. 83); see also the comments in Siegmund-Schultze (2014, p. 1245). Contrast this with a situation sometimes encountered in the post-Soviet world: Eastern European speakers who are fluent in Russian nevertheless insisting upon delivering their conference talks in broken English (Kryuchkova 2001, p. 413).

citizenship and thus denied re-entry to the USSR (Sweeney 1973; Anon 1973b). Despite much further protest, Medvedev was forced to remain in London, where he eventually took British nationality; his Soviet citizenship was restored in 1990 (Beeston and McEwan 1990).

In the late 1960s, Medvedev penned two essays: ‘International cooperation of scientists and national frontiers’ (‘Международное сотрудничество ученых и национальные границы’), which describes the bureaucratic obstacles that a Soviet scientist needed to surmount in order to attend a foreign conference, and ‘Secrecy of correspondence is guaranteed by law’ (‘Тайна переписки охраняется законом’), where Medvedev outlined his suspicions regarding the clandestine censorship of correspondence in the USSR. These essays were first circulated privately in the Soviet Union, before falling into the hands of a British publisher, which issued English translations of both (the first now under the title ‘Fruitful meetings between scientists of the world’) in a single volume: Medvedev (1971).<sup>88</sup> Although written primarily from the point of view of a biologist, these essays detail problems that were experienced by all scientists—researchers in other disciplines were, after all, subject to the same state regulation, and were users of the same postal system. I make a few comments here on Medvedev’s writings, and their relevance to areas other than biology, but for a more detailed account of some of their content, the reader is referred to Hollings (2014, pp. 22–27).

As already noted, the major problems facing any Soviet scientist who wanted to travel abroad, or even to send an international letter, were bureaucratic in nature, and this is something that comes out very clearly in Medvedev’s account. Indeed, what emerges from his writing is a picture of a system beset by difficulties caused not only by the highly complicated nature of Soviet bureaucracy, but also by its inherently contradictory nature: officials in different institutions had conflicting interpretations of what was or was not to be permitted. In connection with applications for foreign travel, Medvedev outlined the enormously complicated procedure that a would-be academic traveller was forced to undergo.<sup>89</sup> This involved the preparation of a so-called ‘exit dossier’, consisting of a wide range of documents, from a work history to a medical report, and also including a character reference, attesting to the applicant’s “political maturity and moral stability” (Medvedev 1971, p. 13). Once compiled, the application would be passed ever upwards through various committees, ranging from discipline-specific panels to a euphemistically-titled ‘exit commission’ (formed of KGB officials). In principle, an application would eventually be sent for approval by the Central Committee of the Communist Party, before arriving finally at the Ministry of Foreign Affairs, who would prepare a foreign passport for the applicant and apply on their behalf to the appropriate embassy for a visa. Needless to say, only a fraction of applications would make it to this final

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<sup>88</sup>Extracts from the first essay also appeared in Medvedev (1970). Medvedev’s more general critique of Soviet science (Medvedev 1979) contains further details of the communications difficulties of scientists across the Iron Curtain.

<sup>89</sup>See Medvedev (1971, pp. 13, 195–208) or Hollings (2014, p. 23). This application procedure is also described in Levich (1976).

stage: the process could be halted at any point, with no explanation. The Western scientific literature is littered with complaints from conference organisers and delegates on the failure of Soviet invitees to appear.<sup>90</sup> The above procedure would often pass somewhat more smoothly if the applicant were a member of the Communist Party, and thus already deemed ‘sound’. Indeed, the attendees who were dispatched from the USSR to foreign conferences were often not those scientists whom the organisers had originally invited, but delegates who had been selected by the Communist Party and/or the Academy of Sciences on the basis of their Party membership status, rather than their academic credentials—in such situations, the Soviet authorities asserted that they were in a better position than mere foreigners to judge the credentials of their own scientists and thus determine whether they were worthy of representing the USSR at international conferences.<sup>91</sup> Indeed, strong words were sometimes exchanged over choices of conference invitees: the invitation by a US-led organising committee of several refusenik scientists to a conference on artificial intelligence in Tbilisi in 1975 was denounced as “American provocation” (Rich 1975a, p. 5). Moreover, some of the delegates sent by the Soviet Union to foreign congresses were often not even academics, but barely-disguised KGB chaperones for the genuine scientists. This certainly did not escape the notice of delegates from other countries, who would sometimes play the game of ‘spot the KGB agent’; the presence of such *faux* delegates was often noted in Western conference reports.<sup>92</sup>

As Medvedev related elsewhere, similar bureaucratic principles even came into play in connection with international conferences that were held within the USSR,<sup>93</sup> although, from around 1960, a shorter application process was adopted for travel to other socialist countries (Medvedev 1971, pp. 208–215). Thus, Czechoslovakia, for instance, became a popular venue for international conferences during the 1960s, since this was a country to which those from both East and West could travel with relative ease: witness, for example, the conferences on semiconductors (1960), plates and shells (1963), order-disorder structures (1964), and genetics (1965), as well as specialised mathematical meetings on the theories both of graphs (1963) and of semigroups (1968).<sup>94</sup> The situation became more problematic, however, following the Soviet invasion of 1968.<sup>95</sup>

<sup>90</sup>For an example from metallurgy, for instance, see Cahn (1970); for one concerning nuclear desalination, see Anon (1968b). On geophysics, see Hamblin (2000b, p. 304). For mathematical examples, see Lehto (1998, pp. 174, 189, 206). For a typical example of the general remarks that were made on this subject, see Holliday (1973). See also Kremontsov (2005, pp. 70–71). A further (particularly entertaining) source in this connection is the letter Ziman (1968), on which see Hollings (2014, pp. 24–25).

<sup>91</sup>See, for example, Lehto (1998, Sect. 9.3).

<sup>92</sup>See, for example, Abelson (1971, p. 797). In his discussion of the International Conference on Peaceful Uses of Atomic Energy (Geneva, 1955), Josephson (2000, p. 174) notes the presence of “the usual KGB staffers”. See also the comments in Kremontsov (2007, p. 61).

<sup>93</sup>See Medvedev (1971, pp. 189–190); see also Anon (1972b).

<sup>94</sup>See, respectively: Smith (1960), Brilla and Balaš (1966), Wooster (1964), Medvedev (1971, pp. 74–80), Fiedler (1964), and Hollings (2014, Sect. 12.3).

<sup>95</sup>See, for example, the remarks in Anon (1968a); see also Hamblin (2000b, p. 308).

As noted above, Western conference organisers were keenly aware of, and often frustrated by, the difficulties in obtaining Soviet speakers. In the first of his essays, Medvedev recounted how, over the years, he had received exasperated letters from counterparts who were trying to bring him on visits to the West, but who had been stymied by the convoluted process of obtaining official (Soviet) permission. He recalled those instances when he had been forced to pull out of a scheduled trip at the last minute when his permission to travel had been withdrawn, with no reason given. On such occasions, Medvedev, and those placed in a similar position, would be instructed by their superiors to make up an appropriate excuse: family illness, heavy workload, etc. As examples, Medvedev reproduced some of the letters that the Soviet Academy of Medical Sciences had sent to foreign conference organisers, declining invitations on his behalf, with excuses such as

Dr Zh. Medvedev cannot go to Vienna to take part in the Congress [of Gerontology] since at the present time he is extremely busy with a number of projects (Medvedev 1971, p. 25)

or the practically identical

Dr Zh. Medvedev will not be able to come to England this year because of a great press of work he has to do in his laboratory.<sup>96</sup>

Indeed, by the time of Medvedev's writing, Soviet officialdom had been employing such excuses for many years. A number of Soviet delegates had been invited to the 1950 ICM held at Harvard, but, as we see from Table 2.1, none were able to attend. Shortly before the congress opened, the organisers received the following cablegram from the then-president of the Soviet Academy of Sciences, the physicist S.I. Vavilov:

USSR Academy of Sciences appreciates receiving kind invitation for Soviet scientist take part in International Congress of Mathematicians to be held in Cambridge. Soviet Mathematicians being very much occupied with their regular work unable attend congress. Hope that impending congress will be significant event in mathematical science. Wish success in congress activities.<sup>97</sup>

Soviet mathematicians were thus at least as 'busy' as their counterparts in cell biology, for there do not appear to have been any Soviet delegates at the Seventh International Congress of Cell Biology, which was held in New Haven, Connecticut, that same year (Brooks 1950), although mathematicians and cell biologists were evidently both much busier than Soviet physiologists, since many of the latter were able to attend the Eighteenth International Physiological Congress in Copenhagen, also in 1950 (Gerard 1950). It is reasonable to suppose that the respective venues of these conferences have some significance here.

By way of concluding this section, we turn very briefly to the subject of Medvedev's second essay: postal censorship. Here, Medvedev outlined his suspicions that many of the letters he sent abroad, particularly those to the United States, were not reaching their destinations, but were instead being intercepted by the Soviet

<sup>96</sup>Medvedev (1971, p. 54). On such excuses, see also Byrnes (1976, pp. 179–180).

<sup>97</sup>Graves et al. (1952, vol. 1, p. 122); see also Lehto (1998, p. 89) and Kline (1952, p. 84).

authorities. His enquiries into this matter were met with the indignant assertion that postal censorship was illegal in the Soviet Union<sup>98</sup>—although, in fact, the examination of foreign letters, particularly scientific ones, in search of hidden messages, had been common since the mid-1930s. As for travel, bureaucracy, contradictory regulations, and the need to obtain official permissions, posed obstacles to the sending of any materials outside the USSR. The submission of papers to foreign journals was now possible, at least in principle, but the associated procedures could be difficult to negotiate. In particular, it was necessary to obtain the permission of one's university's 'First Department', a euphemistic term for the institution's KGB representative. Those assigned to assess whether papers could be sent abroad were rarely specialists, and so the securing of permissions could be particularly difficult in those disciplines with a more arcane presentation, such as mathematics. Indeed, the Soviet authorities did not merely place restrictions on material that was sent out of the USSR, but also on that coming in—more comments will be made on this issue in Chap. 3, in connection with accessibility of scientific publications.

## 2.8 In the Opposite Direction

The main focus of the chapter so far has been on the experiences of *Soviet* scientists, and so I have had little to say about Westerners. Indeed, I have suggested that there is more *to* say about the Soviet side, since, in many respects, Western scientists could do little but *react* to the changing policies of the USSR in connection with international communications. Nevertheless, it will be instructive to look briefly at the Western side of things, for Western scientists were by no means free of home-grown difficulties.

As we have seen, it remained broadly possible for Western scientists to travel into the USSR throughout our period of interest, although the level of difficulty in doing so varied over time. By the 1960s, however, it had almost become easy, at least in comparison to the situation in the opposite direction (Medvedev 1971, pp. 216–222). In 1961, for example, Moscow played host to delegates from 58 different countries at the Fifth International Congress of Biochemistry (Anon 1961). Moreover, as we see from Table 2.1, an enormous number of non-Soviet mathematicians attended the 1966 ICM in Moscow: over 2,000 delegates came from outside communist Central and Eastern Europe (Trostnikov 1967, p. 16). Indeed, 1966 saw the USSR host several international congresses, which similarly attracted large numbers of foreign delegates: besides mathematics, there were congresses on metallic corrosion, microbiology, food microbiology, oceanography, low-temperature physics,

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<sup>98</sup>Such contradictory behaviour on the part of the Soviet authorities was subsequently seized upon by the dissident movement, which called simply for the USSR to obey its own laws. As Gessen (2011) has commented, the dissidents “demanded logic and consistency” (p. 7), so “it is perhaps no accident that the founders of the dissident movement in the Soviet Union were mathematicians and physicists” (p. 178). In this connection, see also Rich (1976).

crystallography, and psychology.<sup>99</sup> Several of these congresses were not without their political troubles, however (Abelson 1966). More generally, Western visitors to the USSR in the post-Stalin period typically found that their movements within the country were restricted,<sup>100</sup> which led in turn, in the US instance, to retaliatory restrictions on Soviet visitors to the USA (alongside restrictions imposed over genuine security concerns: see Lubrano 1981, p. 474); American attempts to negotiate a mutual lifting of these constraints came to nought (Richmond 2003, p. 26).

The submission by Westerners of papers to Soviet journals is a different matter. There do not appear to have been any particular bars to this on the Soviet side; indeed, one might speculate that Soviet editors would have welcomed Western submissions as evidence that their journals had achieved an international standing. However, such submissions appear to have been quite rare. As I will discuss in Sects. 4.2 and 4.3, they were a little more common in the 1920s and 1930s when Soviet journals accepted papers in languages other than Russian, but, with the drive towards the near-exclusive use of Russian from the late 1930s onwards, Western submissions to Soviet journals all but dried up.

To return to the issue of postal censorship, we note that, although this was certainly a bigger problem in the USSR, US scientists at one point found themselves at risk of a similar problem: there were concerns that new legislation, designed to block incoming political propaganda, would affect the receipt of Soviet scientific literature<sup>101</sup>—I will say a little more about this in Sect. 3.2.

In the case of the United States, other political considerations may have affected contacts with scientists on the opposite side of the Iron Curtain, although the evidence for this is nowhere near as clear-cut as one might expect. It is natural to suppose that, at the height of McCarthyism in the 1950s, contacts with Soviet scientists would have been as a red flag (no pun intended) to communist-hunting officials, particularly in light of such high-profile cases of espionage as those of Klaus Fuchs, and Julius and Ethel Rosenberg. There were certainly concerns amongst some in the USA that the purported Soviet scientists who later travelled to North America under the auspices of exchange agreements were in fact intelligence agents, seeking to steal secrets.<sup>102</sup> At the same time, the feeling in some quarters was that US scientists were rather too naïve in their dealings with foreign (particularly Soviet) counterparts (Schweitzer 1989, p. 153). We might thus expect to find examples of the persecution, or at least censoring, of US scientists by the authorities in connection with their Soviet contacts. However, although suggestions to this effect do indeed appear here and there in the literature, these are almost uniformly vague, and

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<sup>99</sup>See, respectively: Anon (1969), Anon (1966a, b), Ingram and Roberts (1967), Charlier and Dietz (1966), Malkov (1967), Kamminga (1989, p. 599), and Rosenzweig (2000, Chap. 9).

<sup>100</sup>See, for example, Anon (1963b). It was observed, however, that there was not necessarily any need to travel extensively within the USSR, since most of the scientific facilities were concentrated in Moscow and Leningrad.

<sup>101</sup>See Byrnes (1976, pp. 122–123) and DuS (1961a, b, 1962).

<sup>102</sup>See, for example, Schweitzer (1989, Chap. 7). Indeed, these concerns may not have been entirely unfounded: see the brief comment on p. 29.



rarely give details on the precise nature of the imputed harassment.<sup>103</sup> The authoritative source on McCarthyism and US academia, namely Ellen Schrecker's *No Ivory Tower* (Schrecker 1986), says little on this matter: the persecuted scientists profiled by Schrecker were all singled out for their left-leaning politics—although it must be observed that the records available to Schrecker were in some cases quite patchy (Gruber 1987). One can easily imagine that any efforts made by such scientists to contact Soviet counterparts would not have helped their cause,<sup>104</sup> but the question of whether there was any persecution of scientists of ‘sound’ politics who attempted to contact Soviet colleagues remains open. The US (or, more generally, Western) authorities may indeed have harboured suspicions of scientists with contacts behind the Iron Curtain, but examples of their having acted on such doubts are rare.<sup>105</sup> It is possible that those scientists who have claimed to have had difficulties with the authorities when attempting to contact Soviet counterparts may have been exaggerating their experiences in order to present themselves in a slightly subversive light, and thus distance themselves from the excesses of the Cold War political climate: as noted above, their comments are rarely specific, and appear to be more in the nature of innuendo. Indeed, such comments clash with those made elsewhere. Take, for instance, the following general remarks made in connection with the Danish marine biologist Anton Bruun, whose contacts with both American and Soviet counterparts made him a conduit for the communication of oceanographic research:

For the West, Soviet science became a source of fascination and fear, its shadowy nature only encouraging curiosity. Individuals who could chart its contours with greater clarity thus possessed a valuable currency.<sup>106</sup>

The peripatetic Hungarian mathematician Paul Erdős served as a similar point of contact for mathematics, although he did encounter problems when the United

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<sup>103</sup>See, for example, the comment that officials at the US State Department “often regarded the efforts of scientists to maintain international contacts as synonymous with communist sympathies” in Doel and Needell (1997, p. 69); see also Doel et al. (2005, p. 67). For such suspicions within the context of the Manhattan Project, see Schrecker (1986, p. 133ff). Moving away from the United States, we have the obscurely-referenced “retrospectively amusing difficulties with the authorities” apparently experienced by the British mathematician G.B. Preston in his efforts to establish contacts with Eastern-bloc colleagues (Howie 1995, p. 269). Niels Bohr was at one point considered a security risk because of his contacts with Soviet physicists (Nielsen and Knudsen 2013, p. 322); see also Aaserud (1999, pp. 32–33) and Knudsen and Nielsen (2012).

<sup>104</sup>One shudders to contemplate, for example, the impression created by the failure to appear before the House Un-American Activities Committee of the US mathematician Stephen Smale by reason of his attendance of the 1966 Moscow ICM; see Greenberg (1966) and Smale (1984).

<sup>105</sup>Examples are provided by the FBI surveillance of certain scientists with Soviet or communist-bloc contacts: see Kremontsov (2002, p. 109) and Kerber (2012, p. 234). These included US-based German rocket scientists with connections in the newly-created East Germany (Cadbury 2005, pp. 132–133). Even if the US authorities rarely acted against academics with foreign contacts, this did not stop some scientists fearing the backlash that communications even with other Western nations might bring: for example, Ellsworth Dougherty, a biophysicist with interests in atomic science, refused to share work with a British colleague in order to avoid any appearance of creating a security breach; see Manzione (2000, p. 40).

<sup>106</sup>Roberts (2013, p. 251); see also Heymann and Martin-Nielsen (2013, p. 232).



States refused him re-entry following his attendance of the 1954 Amsterdam ICM (Hoffman 1998, pp. 128–129). One of Erdős' biographers suggests that Erdős' contacts with the Chinese mathematician Lo Ken Hua may also have given the US authorities 'reason' to regard him with suspicion (Schechter 1998, pp. 162–167).

Erdős was not the only foreign traveller to experience difficulties regarding US visas.<sup>107</sup> The early 1950s saw greater restrictions imposed on visitors to the United States (termed a 'paper curtain' by one author: Anon 1955), the result of which, coupled with the inability of some US scientists to obtain passports (see below), was effectively to isolate American science, much to the concern of many US scientists, who feared that such a segregation from world science would cost the United States its ascendancy (Doel et al. 2005, p. 68). The difficulties of getting foreign (particularly, Soviet-bloc) speakers to conferences in the USA meant that very few international scientific congresses were held there during the late 1940s and early 1950s (Manzione 2000, p. 39). A notable exception is the Harvard ICM of 1950. However, not only were there no Soviet delegates present at this congress (see Table 2.1), there were also no delegates from anywhere else within the Eastern bloc—though the congress proceedings firmly absolve the US government of any culpability in this regard:

In attempting to maintain the non-political nature of the Congress, many serious difficulties had to be overcome. In the solution of these problems, officers of the Congress found the various officials of the Department of State most sympathetic and helpful. As a part of the effort to keep the Congress apolitical, they tried to secure a visa for every mathematician who notified them about any visa difficulties before cancelling his passage. As far as they know only one mathematician from any independent nation was prevented from attending the Congress because he failed to pass a political test and this man did not notify the officers of the Congress about his difficulties. Only two mathematicians from occupied countries failed to secure visas. Mathematicians from behind the Iron Curtain were uniformly prevented from attending the Congress by their own governments which generally refused to issue passports to them for the trip to the Congress. Their non-attendance was not due to any action of the United States Government. (Graves et al. 1952, vol. 1, p. 122)

Even if they played no part in the difficulties of the 1950 ICM, wider US actions in connection with visas were subject to international condemnation and also provoked many an angry reaction from American scientists,<sup>108</sup> leading, for example, to the formation by the Federation of American Scientists of a Committee on Visa Problems, whose remit was to investigate the difficulties experienced by would-be foreign visitors and to lobby the US government for change (Doel et al. 2005, p. 68). Little appears to have been achieved, however: by 1955, four international scientific meetings that had been scheduled to take place within the USA had been moved elsewhere (Doel et al. 2005, p. 68). Moreover, US scientists were forced to turn down a proposed exchange programme with the USSR (Manzione 2000, p. 41). Only gradually did the problems ease—but they didn't disappear altogether: as late

<sup>107</sup>Paul Dirac was another prominent scientist who was denied a visa to visit the USA, probably because of his several pre-war visits to the USSR; see Dalitz and Peierls (1986, p. 158).

<sup>108</sup>See, for example, Manzione (2000, p. 40). On the USA's visa restrictions, see Bok (1955), and also the articles in vol. 8, no. 7 (October 1952) of the *Bulletin of the Atomic Scientists*.

as 1980, visas were still being refused to certain Soviet scientists (Lubrano 1981, p. 474). Nevertheless, conference organisers were often able to carry out careful negotiations with the US State Department. One such case of mediation was that initiated by the US National Committee of the IAU (p. 31), which ensured the presence at the IAU's Berkeley General Assembly of 1961 of many foreign delegates who might not otherwise have been able to attend (Blaauw 1994, Sect. 10.d). It should be noted, however, that not all US scientists had condemned their government's actions: some saw the restrictions on travel as "a necessary sacrifice to win the cold war" (Doel et al. 2005, p. 72).

I conclude this section with some reflections on the place of McCarthyism within the present discussion. It has been suggested that the effects of communist witch-hunts on the American scientific community were not as pronounced as is commonly supposed: that there were a few high-profile instances of persecution, particularly where the scientist in question had engaged in defence work (such as was the case with J. Robert Oppenheimer—see, for example, Wolfe 2013, pp. 21, 36–37), but that the overall impact was slight (Schrecker 1998, pp. 404–407). Nevertheless, leaving issues of international communication aside for the moment, and also stepping beyond the purely scientific realm to consider academia more generally, we may draw loose parallels between the treatment of some US academics under McCarthyism, and events in the USSR such as the 'Luzin affair' (Sect. 2.3). In both instances, the state signalled its disapproval of contacts between its scholars and those on the opposite side of the Iron Curtain. As we have noted, travel restrictions were imposed both into and out of the USA. Those to which US academics were subjected were of course milder than those under which Soviet researchers laboured, but they were by no means trivial—many US scholars whose political allegiances came under question had great difficulties in obtaining foreign passports<sup>109</sup>; in one instance, perhaps in a faint echo of the USSR's predilection for sending only 'politically sound' academics abroad, the US State Department even offered to send a different American scientist for a job in India after it had denied a passport to the chosen candidate (Schrecker 1986, p. 297). Pessimistic about the probable outcome, many 'tainted' US academics simply did not attempt to travel (Schrecker 1986, p. 296). In the opposite direction, the bureaucracy surrounding US visa restrictions on foreign scientists appears in some cases to have mirrored that touched upon in Sect. 2.7 (Nassau 1956; Anon 1955). The ugly shade of career ambition also played a role in both the USA and the USSR: just as Luzin's disgruntled students appear to have sought their own advancement through his downfall, so too did some US academics view cooperation with the House Un-American Activities Committee as an easy path to career development (Schrecker 1986, p. 195). Finally, those who had been maltreated by McCarthy (and others) eventually underwent a process of restitution that was reminiscent of the post-Stalinist Soviet practice of 'rehabilitation', whereby those persons (still alive or not) who had previously been persecuted were restored to a state of political acceptance (Schrecker 1986, p. 338). Overall,

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<sup>109</sup>See the various instances cited by Schrecker (1986, pp. 145, 147, 168, 197, 278, 296–297).

the scope of the victimisation of US nationals during the relevant period hardly compares with that of Soviet citizens, but it is nevertheless interesting to note the elements that the two situations had in common.<sup>110</sup>

## 2.9 Concluding Remarks on Personal Communications

In spite of many continuing difficulties, there was, by the 1960s, a regular exchange of scientific knowledge across the Iron Curtain, in both directions; the *ad hoc* exchange programmes of the preceding decades were also being replaced by larger-scale, centrally-organised schemes, first on well-defined, quite rigidly-specified projects, and then programmes of a more flexible nature.<sup>111</sup> The situation in this period is summarised by Claude Debru in the following terms:

scientists from the Soviet union and satellite countries were able to communicate with their colleagues from the Western world even in the 1950s and 1960s in spite of the mental walls erected by communist authorities in the Eastern block [*sic*] countries, and in spite of occasional difficulties. The situation of individual scientists did, however, vary depending on local circumstances, on the various disciplines and on the big institutions. (Debru 2013, pp. 64–65)

Scientists from one side of the Iron Curtain were travelling quite regularly to attend conferences on the other; witness, for example, the significant US presence at the Fifteenth General Assembly of the International Union of Geodesy and Geophysics in Moscow in August 1971, at which it was noted that the Soviet delegates interacted more freely with foreigners than they had at an earlier meeting in Helsinki in 1960 (Abelson 1971, p. 797). In general, conference delegates travelled not merely for scientific reasons, but were also motivated simply by curiosity. This certainly seems to have been the case for many Western delegates at the 1966 Moscow ICM (Lehto 1998, Sects. 8.1–8.2). In order to satisfy the further curiosity of their non-travelling colleagues, returning conference attendees would often pen reports on what they had seen—such reports will be of particular interest to us in Sect. 3.5.

The situation, however, was not utopian, for international communications were still plagued, on occasion, by the same difficulties that have been described here.<sup>112</sup> For example, of the 36 Soviet mathematicians invited to attend the 1986 ICM in Berkeley, California, only 19 were, ultimately, able to attend.<sup>113</sup> Moreover, the US State Department continued occasionally to hinder international exchanges by placing severe travel restrictions on Soviet visitors to the USA (Shapley 1974). Canadian

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<sup>110</sup>See also the similar comments in Gordin et al. (2003, pp. 50–53).

<sup>111</sup>See the various sources cited in the first paragraph of Chap. 1, which deal also with the new exchange programmes that continued to be negotiated right up until the end of the Soviet era; on these, see also Korneyev (1977, pp. 320–326). On post-Soviet US-Russian scientific exchanges, see Schweitzer (1997).

<sup>112</sup>See, for example, Medvedev (1979, pp. 152–153) or Reid (1977).

<sup>113</sup>See Nathanson (1986). As we see from Table 2.1, the congress was attended by a further 38 Soviet delegates who had not been specifically invited.

visas were denied to Soviet delegates hoping to attend the 1984 General Assembly of the ICSU in Ottawa (Greenaway 1996, p. 102). On the other side of the Iron Curtain, visiting US scientists complained of harassment at the hands of the KGB.<sup>114</sup> Indeed, reports such as these, coupled with concerns about the conditions of life in the USSR, seem to have discouraged some US scientists from participating in the various exchange programmes that were emerging<sup>115</sup>; the impressions recorded by those scientists who did visit the USSR could be very mixed (Schweitzer 1989, pp. 183–185). As noted in Sect. 2.6, Western unease about human rights issues in the USSR provided a stumbling block when it came to the smooth operation of scientific exchanges.<sup>116</sup> Several cultural exchanges were curtailed, for example, following the Soviet invasion of Afghanistan.<sup>117</sup>

Nevertheless, in spite of continuing problems, scientific contacts between East and West were, by the 1970s and 1980s, better than they had ever been. Westerners in particular continued to strive for improved connections with, and broader understanding of, the Soviet Union, in connection with science and technology, and also more generally (see also the comments in Sect. 3.5). In a US text of 1976, for example, we find reference to

the relentless American interest in increasing knowledge and understanding of Russia and Eastern Europe, which remains even now quite deficient. (Byrnes 1976, p. 3)

The same source contains a lamentation of “[t]he absence of a powerful parallel Soviet interest in increasing learning and insight concerning the United States”, which we should probably interpret as referring to the resistance of Soviet officials to the import of general American culture. We have seen that, following Stalin’s death, the USSR engaged enthusiastically in scientific and technological exchanges with the West, in order to gain access to Western innovations, although the Soviet state remained wary of wider Western influences reaching the people.

Closer East-West ties effected a curious change in official Soviet attitudes: in contrast to the earlier condemnation of ‘servility to the West’ and the attitudes surrounding the ‘Luzin affair’, it was now observed by a US commentator that

Soviet scientists take great pride in their publications in Western journals, publications which are often facilitated through collaborative efforts with Western colleagues. (Schweitzer 1989, p. 181)

Indeed, honorary membership of foreign learned societies even became a positive factor in securing promotions within Soviet academia (Schweitzer 1989, p. 182).

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<sup>114</sup>See Byrnes (1976, pp. 192–198). Indeed, even from the early years of the USSR, VOKS had aided the Soviet secret police in keeping track of foreign visitors; see David-Fox (2012, pp. 58–59). Conversely, Soviet visitors to the USA had sometimes been kept under surveillance by the FBI; see Richmond (2003, p. 28).

<sup>115</sup>See Byrnes (1976, p. 115); for reports (mostly) of a more positive nature, see Kuznick (1987, pp. 112–143).

<sup>116</sup>See the references in note 75 on p. 30.

<sup>117</sup>See, for example, Lubrano (1981), Katz et al. (1980, p. 6), and Anon (1984).

Recall from Sect. 2.6 the remark of a Western observer that Soviet scientists were, collectively, ‘more open’ to entertaining foreign ideas than perhaps were other segments of the Soviet population. Indeed, this open-mindedness on the part of Soviet scientists, and academics more generally, fuelled the hopes of Westerners that increasing contacts with the USSR, both cultural and academic, might gradually serve to influence Soviet policy and attitudes. Scientific contacts played a particularly prominent role in this connection, as Graham (1998, pp. 32–33) has remarked:

[s]cience and technology have acted powerfully as moderating influences, as forces pulling Russia towards the West, as factors reducing the differences between Russia and the West.

Some authors<sup>118</sup> have argued that the gradual ‘Westernisation’ of Soviet academics through visits to the USA, for example, may have contributed first to the opening up of the USSR during the 1980s, and then to its eventual collapse:

Among the thousands of Soviet and East European academics and intellectuals who were exchange participants in the United States and Western Europe during ... the Cold War, many became members of what, in retrospect, turned out to be underground establishments. They were well-placed individuals, members of the political and academic elites, who began as loyalists but whose outside experiences sensitized them to the need for basic change. Together with the more radical political and cultural dissidents, towards whom they were ambivalent or hostile, they turned out to be agents of change who played a key part, sometimes unintentional, in the demise of European Communism. (Kassof 1995, p. 263)

The author Yale Richmond (2003, pp. 22–47) has recorded several examples of Russians who visited the USA as students and who, in later years, became prominent Soviet policy-makers. Although, in most cases, these people were not turned against the USSR, they had nevertheless enjoyed a glimpse of a different system, and went on to introduce a more liberal element into Soviet politics. Official Soviet fears of ‘cultural pollution’ thus appear to have been justified.

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<sup>118</sup>For instance, Kassof (1995), Graham (1998, Chap. 2), and Richmond (2003, Chaps. 4 and 5).

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