

## Chapter 2

# Shafarevich's Early Years in the Young Soviet State

### “Absolutely No Room for Anything Transcendental, Higher”

Much of this chapter about Shafarevich's life and experiences before the 1960s consists of excerpts from his interviews. His own words evidently provide the best keys to understanding his way of perceiving things. They also help to comprehend the motives behind Shafarevich's decisions and statements to come. Since he has repeated many of the episodes and experiences recounted here in several interviews, it is reasonable to assume them to be his most powerful perceptions about Soviet society – those having shaped his most fundamental convictions.

This chapter also puts briefly on record the most essential in Shafarevich's mathematical career up to this day. In whatever projects Shafarevich has been engaged, he has always been first and foremost a mathematician. In the subsequent chapters his mathematical career will not be touched upon except when it is relevant for other matters.

Igor Rostislavovich Shafarevich was born on 3 June 1923 in Zhytomyr [Zhitomir] in the Ukraine – for the simple reason that while in Moscow his parents had a small room in a communal apartment, in Zhytomyr his mother's father, a director of a local branch of the State Bank, was living in a spacious flat.<sup>1</sup> Since then Shafarevich has lived practically all his life in Moscow. His mother, Iuliia Iakovlevna Vasileva, originated from a family of Pskov landowners. Before the revolution she had completed a degree in philology in Bestuzhev courses in St. Petersburg, the first higher education establishment for women in Russia. A talented amateur musician, she had studied piano under the tuition of Teofil Rikhter [Theophil Richter], the father of the great pianist Sviatoslav Rikhter [Richter], in Zhytomyr.<sup>2</sup>

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<sup>1</sup> Shafarevich 2002a.

<sup>2</sup> Shafarevich 2001g; 1991h; 2002a; no date.

Shafarevich's father, Rostislav Stepanovich, came from the Ukrainian government of Volyn [Volin, Volhynia], from a family of Orthodox clerics. Initially the Shafareviches stemmed from Southern or Western Slavic territories, possibly Serbia or Poland. This is where their name, with its root in the word *shafar*, a proprietor or host of the house,<sup>3</sup> originates as well. Rostislav Shafarevich studied in Moscow State University before the revolution, graduated from the mechanical mathematical faculty and began teaching theoretical mechanics in institutes of higher education such as Moscow Engineering Institute (Technical University of Moscow).<sup>4</sup>

Shafarevich has often emphasised the overwhelmingly traumatic experiences his parents' generation had to go through. When an interviewer suggested in 1989 that Shafarevich's own generation had had to endure so many tragedies that it could be called "a lost generation", he answered:

yes of course, in a well-known sense it is also a lost, and pressured generation. The war took many, moreover, of the best, the most talented people. But on the other hand, if one looks at it from a larger perspective, it is [...] a generation that has found itself, a generation reborn. It is, perhaps, a generation having experienced Khrushchev's reforms more distinctly than others. Before the year 1956 [of Khrushchev's sensational denunciation of Stalin's personality cult and the purges] I had the feeling that Russia and its age-old history and culture is destroyed, dead, and that beauty and meaning could be found only in mathematics or art but not in the surrounding reality. And suddenly – the dead body starts to breathe, to move. For me it was like a landslide, like a revelation, like some kind of a miracle. But not everyone took it like this. My father, for instance – and this was typical for his generation – did not believe in anything any longer and did not want to believe, meeting all changes with apathy. Their generation truly could not get out from under the rubble of the past.<sup>5</sup>

In another interview Shafarevich accounted for what his father and his peers had had to undergo:

Before [the revolution and the years of the civil war] they used to think that a person whose parents had a higher education would also get an education, and, consequently, that without any effort he would live a peaceful life unless he had some extraordinary pretensions. If he would like to become a more famous scholar, for instance, he would need more effort in order to be accepted to stay for the preparation of the dissertation and so on. They didn't have a slightest doubt that all of that social layer, the intelligentsia, would have a peaceful life, with at least some material comfort. If it was in the provinces, it would mean large apartments, a clean shirt every day, domestic help and so on. But instead they collapsed into something simply incomprehensible for them. It was threat of execution, for example. [...] Simply, because some party came to town,<sup>6</sup> or hostages were taken, or just in case, or because you had boots. My father was twice taken to be shot, he said. And once it all ended up in him being inspected. They checked what they could take from him and whether it was

<sup>3</sup> Vasmer translates *shafar*, met in various Slavic, particularly Western Slavic languages, as *ekonom* or *upravliaiushchii* of contemporary Russian (Fasmer 1996, 414), and Unbegaun specifies that it comes initially from the German *Schaffner* through Polish *szafarz* (Unbegaun 1972, 279).

<sup>4</sup> Biografia avtora; Shafarevich no date; 1991 [1989]a; 1991h; 2001g.

<sup>5</sup> Shafarevich 1991 [1989]a, 219.

<sup>6</sup> Certain parts of the Ukraine experienced fourteen different regimes during the period 1917–1920.

worth shooting him. And when they saw that he had shoes – not boots – he was let go. Hunger, typhus, death of people in masses. Of which they had had no idea before.<sup>7</sup>

In the same interview Shafarevich added that in this generation “the mortal fright they had gone through” could be sensed: “Those who had children were dreaming: if only to be able to raise our children, what else is there to hope for.”

Shafarevich, who let it be known in public during the Soviet years that he was a believing Orthodox Christian, has naturally been asked about his experiences concerning religion. He has recounted that before the revolution many of the generation of his parents had been quite religious:

They had grown into the life of the church in some sense automatically. They said that prayer used to be something daily and habitual. A teacher from the university, Boris Nikolaevich Delone [Delauney],<sup>8</sup> said to me, I remember: ‘You know, Igor, I understand it’s quite foolish, but up to this day I occasionally feel drawn to prayer.’ Father used to tell me that when they had gone with the whole class to take communion before Easter, it had been impossible to play tag while everybody wanted to give in.<sup>9</sup>

Actually, Shafarevich’s father had even considered going into a monastery before his marriage, having already chosen himself a monastic name, Savvati.<sup>10</sup>

The revolution and the civil war changed the psychology greatly. My father said, too, that what he saw and went through during the years of the civil war made him lose his faith in the kind of God who is good to man; a God whom it’s possible to have personal contact with. Albeit in old age, I saw, he often made the sign of the cross.<sup>11</sup>

However, he was not what is called an atheist. Atheist is somebody hostile towards religion. He, on the contrary, spoke with sadness that he had lost something he had perceived as beautiful and gentle.<sup>12</sup>

Shafarevich explains this attitude towards religion among the people of his parents’ age as a relationship “as if to something hostile or... terrifying, dangerous.”

It was like an attitude to a family where somebody had been arrested. If they were decent, if they were people close to you, the relations would not be cut. But there was a feeling that there was something dangerous there. [...] Most people shunned [religion] and looked at it as something risky. But it was not calculation, you understand? It was particular to the consciousness that had developed and it did not consist of calculating in the sense of considering that this deed will threaten me with this and that. It was a general atmosphere of fear.<sup>13</sup>

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<sup>7</sup> Shafarevich no date.

<sup>8</sup> Delone was one of Shafarevich’s two supervisors, a specialist in analytical geometry. He had versatile talent in music, art and mathematics (“Boris Nikolaevich Delone”).

<sup>9</sup> Shafarevich no date. See also Shafarevich 1991 [1989]a, 219.

<sup>10</sup> Shafarevich 2003m.

<sup>11</sup> Shafarevich no date.

<sup>12</sup> Shafarevich 2003m, see also 2000 [1997]a, 322 for a similar account.

<sup>13</sup> Shafarevich no date.

Time and again Shafarevich has also recalled the persecution of religion which reached its most absurd heights during the 1930s when he was going to school in Moscow.<sup>14</sup> A semi-official atheistic organisation *The League of the Militant Godless* had set in 1932 as its objective to destroy all the churches by 1935 and, by the time “the godless five-year plan” was to be completed in 1937, to annihilate the word “god” from the Russian language altogether. Shafarevich continued, “Before the war, I remember it very well – not that I experienced it from a Christian point of view, as an attack on myself, but rather like an observer looking at it – the pressure was very hard.”<sup>15</sup> All the same, Shafarevich admits he has not been able to forget some impressions from childhood. As he says, opposite their house stood a church, and it had a yard he had to cross to go to school. He recounts an occasion:

I go past the church, and at that moment the *plashchanitsa*<sup>16</sup> is being carried out of the church.<sup>17</sup> Some old people are present in the ceremony and a howling crowd is gathered around them. Suddenly three *komsomol* youths break out, and, pretending to be drunkards, attempt to shove the priest. The crowd continues to laugh with approval. [...] And as each of my generation, and from the older one even more, has encountered something like this, it has penetrated into the soul and left a deep mark.<sup>18</sup>

Then that church was closed down. And it was such a horrifying fact; the *starosta*<sup>19</sup> hanged himself on the gates of the church. Such a terrible thing, for a Christian it is a frightful sin. . . Or he was hanged, perhaps. I don't know. And later the church was blown up – in a very accurate way, so that only the dishes in the houses nearby were clinking.<sup>20</sup>

It is well-known that the backbone of the Orthodox Church during those fearsome years were the *babushkas* – old women, or literally, grannies. They kept stubbornly attending the services and adhering to the traditions even though open profession of Christianity was practically outlawed. In the case of Shafarevich, too, this holds true. His grandmother brought him *prospkhora*, tiny blessed loaves of bread given to the faithful after celebrating the liturgy. She also took him occasionally to church to take communion. This was the same church opposite their house, the Church of the Transfiguration of Christ on Bolshaia Spasskaia, which was to be destroyed in 1938.<sup>21</sup>

<sup>14</sup> See, for instance, Shafarevich 1991 [1989]a, 221.

<sup>15</sup> Shafarevich no date. For further studies, see Tsy-pin 1997, 196–214; Peris 1998.

<sup>16</sup> *Epitaphion* in the Greek tradition – the embroidered cloth depicting Christ in the tomb.

<sup>17</sup> This happens on Good Friday, during a cross procession of one of the most solemn services of the Orthodox church year, a symbolic funeral service for Christ.

<sup>18</sup> Shafarevich 1991 [1989]a, 235–236. For a similar account, see Solzhenitsyn's 1969 story *Easter Procession*.

<sup>19</sup> A *starosta* is a warden of a parish, usually chosen by the parish council as its representative to take care of the church. During these early Soviet years the state authorities saw that sincere believers were hounded out of the job or simply eliminated.

<sup>20</sup> Shafarevich no date.

<sup>21</sup> Shafarevich 2000 [1997]a 322; 1994b; 2003m; *Sviatyni Drevnei Moskvy*, 149.

The campaign of closing, and often blowing up the churches soon after was so systematic that in 1939 in the whole of the territory of the Russian Federation only about a hundred churches were still open. According to the requirements of contemporaneous political correctness they were demolished for the sake of “the pleas of the working collectives”, with the aim of “improving the city planning”.<sup>22</sup> Shafarevich recounts further:

I had to go two stops on the tram to go to school, and all trams carried the placard *Science and technology have proved that there is no god*. This interested me greatly, I was not yet in the upper classes and for that reason understood that maxim very literally. I reasoned that somewhere, in some place, some experiment had been made. So I was badgering adults with ‘How was it proved?’<sup>23</sup>

I went straight into the second class in school because I already knew how to write. And so during the first lesson we were told to write the tag line in our exercise books: *We did not get bread from Christ but from the machines and the kolkhoz* [ . . . ] We had to frame these words with coloured pencils. And of course it was a strong influence, thrusting from you any religious feeling. But it seems to me, as I remember that time, it was more than that: the whole of life, the character of life was such that there was absolutely no room for anything transcendental, higher. It was a strained race all the time: ‘Quicker! More!’<sup>24</sup>

The *udarniks* – spearhead workers, or literally, “the hammerers” – visited the school to tell the pupils how they had exceeded their work quotas, be it 20 times or 100 times.

As if some grandiose machine was at work, in which men perceived themselves as cogs. [ . . . ] There was a feeling that it is possible to adopt its rhythm and to turn to the directions it has been programmed to go, or then try to go in another direction and be instantly crushed.<sup>25</sup>

Despite these powerful experiences (and no doubt, also instigated by them) Shafarevich gradually developed a religious conviction. As a child he had discovered the Gospels at home in a closet full of books published before the revolution: “I even undertook to learn them by heart, but then for some years again forgot about it altogether. That happened more than once.”<sup>26</sup>

Basically, he explains, “the process of coming to God happened as if by itself, without even leaving a distinct memory.”<sup>27</sup>

I remember, when I was already in my teens, I started thinking: what is it that we know in our times that distinguishes us so decisively from our ancestors, say of 500 years back or even 100 years back, so that they could believe in God but we cannot? And I started to revolve it in my mind and ended up with the conviction that there is nothing so extraordinary at all.

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<sup>22</sup> Tsypin 1997, 254.

<sup>23</sup> Shafarevich 2000 [1997]a, 322, see also the almost identical account in 1991 [1989]a, 221.

<sup>24</sup> Shafarevich 2000 [1997]a, 323.

<sup>25</sup> Ibid.

<sup>26</sup> Shafarevich 1991 [1989]a, 221.

<sup>27</sup> Shafarevich 2003m.

He added that nowadays man is certainly able to detonate bombs, “but after all, that does not define our relation to God in any particular direction.”<sup>28</sup>

## The Living Well of Literary Treasures

The 1930s was a notorious decade for the young Soviet state not only in respect to religion. The purges, denunciations, nightly arrests and executions were accompanied by the spectacular show trials of the “enemies of the people”. Commenting in 1989 on the peculiar atmosphere during the twenties and thirties, Shafarevich said:

I don't believe those people who later said and even to this day keep on insisting that then, at the time of the repression, they did not know or understand anything. As if only after the 20<sup>th</sup> [Party] Congress [of 1956, when Khrushchev held the so-called secret speech] were their eyes opened. No, I don't believe it. People understood everything, but they were frightened to such an extent that they artificially made themselves not think about the terrifying things. Such self-deception and self-deformation allowed them to convince themselves that white is red and red is black. It gave way to believing without a trace of doubt entirely wild and fantastic arguments and recognise eternal truths as illusions. However, the more complete the self-deception, the bigger the chances for a career.<sup>29</sup>

When I asked Shafarevich how he, living in Moscow, knew about the forced collectivisation, the terrible hunger and other tragedies of the Soviet countryside, he answered: “Of course I knew about it. Everybody did. No question about it.”<sup>30</sup> Trying to explain this atmosphere where the nature of the purges was evident to everyone, he has recounted elsewhere that as fourteen–fifteen- year-olds he and his friends were innocently speculating about the show trials primarily from the point of view of how the confessions of the accused had been obtained:

It didn't even occur to us that the accused could be Japanese or English spies. Not long ago one old acquaintance reminded me how, standing in some queue, we were discussing with him a leaflet exposing the Stalinist terror we wanted to write. People in the line occasionally cried out at us: ‘Shut up, you fools’, but no-one attempted to take us to Lubianka.<sup>31</sup>

The years between the two wars were a time of big poverty,

In the sense that we all lived in communal apartments, for instance. I remember fewer acquaintances of mine living in separate flats than there are fingers in one hand. In school, for example, was a grand-daughter of an old Bolshevik who invited us to her home. We went and were struck by a strange vision: you go in and there is only one doorbell!<sup>32</sup>

<sup>28</sup> Shafarevich 2000 [1997]a, 324. See also the almost identical account in Shafarevich 1991 [1989]a, 221.

<sup>29</sup> Shafarevich 1991 [1989]a, 226. For a similar statement, see Bukovsky 1979, 101.

<sup>30</sup> Shafarevich 2003a, see also 1993g and 2010a, 110.

<sup>31</sup> Shafarevich 1991 [1989]a, 227. Lubianka was the infamous headquarters of the state security in the centre of Moscow where all the newly arrested were brought to.

<sup>32</sup> Shafarevich no date.

In the conditions of severe housing shortage in Moscow it was not uncommon that friends or relatives would be accommodated. Sviatoslav Rikhter, who was to be one the most outstanding pianists of the 20<sup>th</sup> century, stayed with the Shafareviches in the late thirties and early forties.<sup>33</sup> Beside being a former student of Rikhter's father, Shafarevich's mother was a friend of his mother and aunt.<sup>34</sup> The communal apartment in which the Shafareviches had their little room, had formerly been a music printery. Its engine room had been converted into an apartment of seven rooms for seven families.<sup>35</sup>

Shafarevich has repeatedly said that the most enchanting place he knew at home, and the most valuable treasure he inherited from his parents, was a big closet filled with old books. There he first made discoveries of Russian fables and folk tales (*skazki* and *byliny*) and myths and legends of the Ancients.<sup>36</sup> This liking was to be lasting: the first item in Shafarevich's list of favourite readings compiled in 1993 is "children's tales [-] not the invented ones, but the collected ones; such as those by Afanasev and the brothers Grimm". As he explained in an interview in 1989,

much is said about 'international upbringing', but what could be better than folk tales? They are, after all, deeply international. It's the well-known problem of ethnography: how can the storylines of folk tales of totally different peoples, for instance, of the Lapps and the Caffers, agree at times down to the smallest detail?<sup>37</sup>

At home he also came to like ancient Greek tragedies, "especially Aeschylus, in particular *Prometheus Bound* and *Eumenides*". Herodotus' *History* is by their side in Shafarevich's later-day list of literary favourites.

In the same connection Shafarevich mentions "scholarship on mythology", especially Vladimir Propp's *Historical Roots of Magical Tales* [*Istoricheskie korny volshebnoi skazki*] and Eliade's *Myth of the Eternal Return*, and works on "the history of the Russian soul", as he puts it. Here he brings up such Russian-language classics as Dmitrii Likhachev's *Great Heritage, Classical Works of the Literature of Ancient Rus*, Sergei Smirnov's *Father Confessor of Ancient Rus*, Gelian Prokhorov's *The Tale of Mitiai and Cultural Traits of the Epoch of the Battle of Kulikovo*, and Aleksandr Panchenko's *Russian Culture at the Eve of the Petrine Reforms*.<sup>38</sup> Obviously not all of these were among the books Shafarevich got acquainted with as a schoolboy – some of them were even written much later. However, they do reveal what kinds of books he came to like at an early age which were to have a profound influence on his literary taste later in life.

The riches of the home library which the young Shafarevich was perusing further included the classic histories of Russia by Sergej Solovev and Vasilii Kliuchevskii

<sup>33</sup> Monsaingeon 2001, 40; Shafarevich 2002a.

<sup>34</sup> Neigauz 2000a, 35; Shafarevich 2002a.

<sup>35</sup> Shafarevich 1994b.

<sup>36</sup> Shafarevich 1991 [1989]a, 221; 2002a.

<sup>37</sup> Shafarevich 1991 [1989]a, 222.

<sup>38</sup> Zavetnyi spisok. See also 'Zavetnomu spisku' – 10 let.

and works by the great Russian religious philosophers Pavel Florenskii, Sergii [Sergius] Bulgakov, Vasilii Rozanov, and Nikolai Berdiaev.<sup>39</sup> Shafarevich's fondness for literary classics goes back to his youth as well. He has later included in the list of his best-loved books the first part of Goethe's *Faust*, and "classical Russian literature – in particular Pushkin and Dostoevskii", accompanied with an addition in brackets: "but I think this is obvious for everyone, in any case."<sup>40</sup> He concludes, "[the *skazki*] together with the Russian culture – the *bylinas*, *The Tale of Bygone Years*, Pushkin, Dostoevskii – have formed that layer of my psychology that has served as a support in the most difficult moments of life."<sup>41</sup> The fact that Shafarevich is well-read and has a solid upbringing in the humanities is also revealed somewhat humorously when he remarks in yet another interview with incredulity and the utmost disapproval that he has met "American professors who have not read Dickens."<sup>42</sup>

As Shafarevich discovered these literary treasures, a central feature in all social life was treading the ground of "relics of the past". In his words:

We were raised to think in such a way, and I apprehended it so, too, that we live in a country, a state, which had never existed in history.<sup>43</sup>

What I wanted to be at first was a historian. Some book on history came into my hands. Not even all that interesting. A translation from German on history of antiquity for grammar schools. And suddenly I felt that the world was not limited to what is around me but extended in all directions in time and space.<sup>44</sup>

I discovered for the first time for myself that I and those surrounding me are only one link in an endless chain of generations. I instantly fell in love with history, up to the point of immersing myself in it. I read Solovev, Kliuchevskii, even Pokrovskii<sup>45</sup>. . . I took part in a history study circle, wrote papers. I still have a childhood manuscript in which I was proving that False Dimitrii<sup>46</sup> was the real Dimitrii.<sup>47</sup>

In defining the literature he holds dearest, Shafarevich has said it is that which "stems from deep national and cultural roots and gathers in a way harvest from an enormous historical field."<sup>48</sup> He has emphasised several times how the revolution destroyed not only the culture of the cities and the intelligentsia but also

<sup>39</sup> Shafarevich 1991h; 2002a.

<sup>40</sup> *Zavetnyi spisok*.

<sup>41</sup> Shafarevich 1991 [1989]a, 222. *The Tale of Bygone Years* is the oldest known Russian chronicle, dating from the 11<sup>th</sup>–12<sup>th</sup> centuries.

<sup>42</sup> Shafarevich 1999c.

<sup>43</sup> Shafarevich 2003m.

<sup>44</sup> Shafarevich 2001g. See also the almost identical account in Zdravkovska 1989, 26–27.

<sup>45</sup> Mikhail Pokrovskii had the status of the official Marxist–Leninist historian.

<sup>46</sup> False Dimitrii, who reigned in 1605–1606 during the Time of Troubles, pretended to be the son of Ivan IV.

<sup>47</sup> Shafarevich 1991 [1989]a, 222.

<sup>48</sup> Shafarevich 1994 [1989]b, 244.

another [culture], no less powerful, profound and beautiful: the culture of the countryside that was inherent in the life of a great part of the population in our agrarian country. Our revolution reacted to it in such a barbarian way simply because it represented the former life.<sup>49</sup>

## Mathematics and Music – Two Islands of Beauty in the Soviet Union

At the age of 12 or 13 Shafarevich's wish to become a historian changed abruptly:<sup>50</sup>

I felt the pull of mathematics. First just simply on the level of school textbooks [. . .]. I was ill and started to read the courses of mathematics ahead for the ensuing years; it captivated me. Then I started to read books on mathematics outside of the school programmes.<sup>51</sup>

Shafarevich was attracted to mathematics above all by its “strong aesthetic element”.<sup>52</sup> Even if the confession might seem a little astonishing, for professional mathematicians such an attitude is rather the rule than the exception. Shafarevich explains, “As one mathematician and philosopher has put it, if one compares life with the drama of Shakespeare [. . .], mathematics will play the role of Ophelia. She is charming and a little mad. There truly is something extraordinary in her.”<sup>53</sup>

Shafarevich has repeatedly highlighted that mathematics had the magnificent asset of being entirely non-ideological – something humanists, artists and practically oriented natural scientists could only dream of: “I could hardly have understood that as a 10–12-year-old boy, but maybe I felt it subconsciously.”<sup>54</sup> And since mathematics was far from all application “problems did not arise about any kind of plans<sup>55</sup> or that you would be sent to manage some construction project and discover your workers were political prisoners and encounter that terrifying side of life.”<sup>56</sup> More than once Shafarevich has compared the retreat to mathematics with going into the monastery, offering “freedom from the hardships of life and worldly problems in the monastery of mathematics.”<sup>57</sup>

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<sup>49</sup> Shafarevich 1991 [1989]a, 224.

<sup>50</sup> Shafarevich 1994b.

<sup>51</sup> Shafarevich 2001g.

<sup>52</sup> Shafarevich 1991 [1989]a, 223.

<sup>53</sup> Shafarevich no date, see also 2004f, 223.

<sup>54</sup> Zdravkovska 1989, 27.

<sup>55</sup> An essential element of almost all walks of life in the Soviet system was “fulfilling the plans”. And often, to demonstrate the vitality of the system, it was alleged at least that the plans were not only met, or “fulfilled”, but exceeded, “overfilled”. Best known were the five-year plans, but there were also plenty of others.

<sup>56</sup> Shafarevich no date; 2004e, 206.

<sup>57</sup> Shafarevich 2001g.

Since ideological freedom was an enticing reason for many other young people as well to choose mathematics, it became a popular field of study before the war and in its early phase: "At that time, on the scale of those days, the pursuit of science did not offer absolutely any advantage of prominence or prestige. And despite that, our mechanical mathematical faculty attracted a lot of people."<sup>58</sup>

True, during the twenties and thirties Moscow mathematicians had also been accused in show trials<sup>59</sup> but not even the most isolated islands of Soviet society could escape such cases.

Relating how he had entered university in an interview with a former student, Shafarevich said,

I never entered it. I was a bold kid. While a schoolboy, I came to the dean [of the mechanical mathematical faculty] and told him that I had been reading textbooks and that I did not know whether I understood them correctly, whether I really understood them.

This encounter in 1938 resulted in 14-year-old Shafarevich being tested by three professors who were to become his teachers and supervisors, and he was accepted as an "external" in the mechanical mathematical faculty of Moscow University, taking examinations while going to school.<sup>60</sup> In a later film made of him Shafarevich says that his parents, worried that his studies in school might suffer because of his strong interest in mathematics, gave way to him only on the condition that he would study geometry in English and algebra in German.<sup>61</sup>

After having finished the ninth grade in school, Shafarevich started his last year of university. Late in the 1930s he even appeared in a Soviet propaganda film, toiling at his textbooks and taking a ski tour in the woods with friends, exemplifying a paragon of Soviet youth. The text of the silent film reads: *A 16-year-old student of the 5<sup>th</sup> course of the university, Igor Shafarevich, has been nominated as a candidate for the Lenin scholarship.*<sup>62</sup>

He received his university diploma when turning 17 in 1940 and defended his candidate's dissertation [approximately the equivalent of the PhD thesis] two years later, in 1942.<sup>63</sup> Commenting on the astonishment of an interviewer about the early start to his career, Shafarevich explained himself,

You know, it is true that I started early as mathematician. But there is nothing exceptional in that. It is in any case a feature of mathematics in particular. It does not require remarkable experience of life, collecting a great number of observations and materials, or some sort of journeys like for geologists.<sup>64</sup>

When the war broke out in June 1941 with the unexpected German attack,

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<sup>58</sup> Shafarevich no date; see also 2004e, 206.

<sup>59</sup> Tokareva no date.

<sup>60</sup> Zdravkovska 1989, 21.

<sup>61</sup> Shafarevich 1994b.

<sup>62</sup> Ibid.

<sup>63</sup> Zdravkovska 1989a, 21. See also Shafarevich 1991 [1989]a, 219–220.

<sup>64</sup> Shafarevich no date.

all the postgraduate students were called together and it was announced that we were being enlisted in the so-called 'People's Militia'. They told us that we were first being sent to the barracks, where we would go through a short training course, and then we would perhaps live at home but be periodically on duty guarding various objects in Moscow. Then my teachers B. N. Delone and A. G. Kurosh wrote a letter to the district committee (the militia was being formed by the district committees) with an appeal to let me return to graduate school and I was deferred. Soon I was mobilized to dig antitank ditches in the district of Borodino. This work continued for more than two months, until an artillery barrage could be heard from the direction of Moscow. We were ordered to move to Mozhaisk, and from there, under bombing by German planes, we returned by train to Moscow. In Moscow I found that the university people had been evacuated to Tashkent [in Uzbekistan], and I proceeded to follow them there.<sup>65</sup>

Later the university was relocated in Ashgabat (in present-day Turkmenistan), where Shafarevich defended his candidate's thesis.<sup>66</sup> During the two years when his faculty was in evacuation, Shafarevich also stayed in Sverdlovsk and Kazan.<sup>67</sup>

All in all Shafarevich considered the war years as the most powerful experience of his life. He further recounted: "I remember how an entirely mysterious turn in the war astonished me. It gives a special meaning to the history of Russia, and to the existence of man. I remember the feeling of catastrophe at the beginning of the war." He returned from Mozhaisk, on 15 October:

Having slept a night, I decided to go to the university in the morning, got to the metro, and it was not working. It was the only day during all those decades that the Moscow metro didn't work. I went walking and met acquaintances who asked: 'Did you see them?', 'Whom?', 'The Germans – somebody called us and said the Germans have attacked Moscow.'

That night, taking a stroll, Shafarevich and his friend Rikhter saw tanks, all going eastwards. The next morning the stream intensified: "it was the beginning of some sort of a flight from Moscow". Indeed, on that day, 16 October, the government was evacuated to Kuibyshev.

Suddenly they announce on the radio that at 12 o'clock Molotov will make a speech. I wait, but at 12 o'clock they announce it's put off for an hour. At 1 o'clock an entirely different decree of some commander is read, saying that the irregular work of hairdressers, public baths and some other things had been noticed, and such things should not occur, all services should work. Something happened during those hours and even minutes in Moscow and in the country. [...] It was the beginning of a turn in the war. [...] I then understood that apart from the number of mobilised soldiers, the amount of ammunition and other visible material things, a mental posture, some sort of 'idealistic push' can also be materialised, becoming a real factor of life.<sup>68</sup>

Sviatoslav Rikhter, living at the Shafareviches at the time, told his biographer about another walk he took with Shafarevich already before this, five days after the

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<sup>65</sup> Shafarevich 2001a, 236.

<sup>66</sup> Shafarevich 2002a.

<sup>67</sup> Shafarevich 2011b. See also Nikolskii 2003, 24, 28 and 36–37 for interesting contemporaneous reminiscences involving Shafarevich of the time in evacuation and straight after it.

<sup>68</sup> Shafarevich 2001g, see also 1994 [1991]e for his memories about the war.

German attack. They had been planning a long expedition for some time and decided to go before it was too late. Forty kilometres from Moscow they were stopped by local peasants.

[They] took us to be saboteurs of spies sent by Hitler and bundled us off to the nearest police station. They discovered the word 'German' on my ID card. And when he saw Shafarevich's, the chief of police couldn't conceal his surprise: 'What's all this, then? Nineteen and already in your second year at university? That's rum.'<sup>69</sup> I tried to explain: 'It's because he's very gifted...' Shafarevich found this irresistible and burst out laughing. The police chief, who had been extremely threatening until now, suddenly relaxed: 'You know what you're going to do? Get on the first train home without delay.' We were escorted to the station. Having been disciplined, we followed them to the station, gossiping with them as we went. It seemed these peasants had taken a liking to us. Everything was sorted out, though it was two in the morning when we finally got back to the Shafareviches', where I was staying at the time.<sup>70</sup>

Like many mathematicians in the Soviet Union, Shafarevich also loved mountain hiking.<sup>71</sup> For instance, he took part with Rikhter in an "Alpiniade" dedicated to the 20-year-history of Soviet mountain hiking in the summer of 1944. In the words of Militsa Neigauz, the two youths

hiked in the mountains, enjoyed the beauty of the heights, waded across mountain rivers, lived in tents, cooked porridge on a camp-fire and went on foot through the Klukhori pass to Sukhumi [in Abkhazia, Caucasus].<sup>72</sup>

In his youth Shafarevich also went mountaineering in Central Asia, Karelia and other parts of the country.<sup>73</sup> He retained this custom all his life, as he explained in 1989: "I still go hiking with my students. I stopped hiking in the mountains because it has become difficult for me. [...] But we go outside of Moscow, always with students."<sup>74</sup> Yet another passion of his was music:

Other than mathematics, I am most interested in history (the applied science, which gives the possibility to understand what is going on now), and then music. I really used to go to

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<sup>69</sup> When it comes to details, Rikhter's memory fails him a little. On 3 June, just a few days before their expedition, Shafarevich had had his 18<sup>th</sup> birthday. Having got his university diploma the previous year, he was now working on his first dissertation.

<sup>70</sup> Monsaingeon 2001, 44.

<sup>71</sup> He said, "My love for hiking was Delone's influence. He was a well-known lover of mountain hiking. His feeling for natural beauty was surprisingly strongly developed. If you wanted to travel in the mountains where it is beautiful, the best way was to ask Delone. You could rely on him 100% there. He would always recommend a route, a pretty pass. He would say: 'Everyone goes that way, but you go this way, it is more beautiful.'" (Zdravkovska 1989, 28. Almost identically in Shafarevich 2004f, 224.) Delone himself reminisced how he, Shafarevich who was "still a boy", and a mathematician named Nikolskii once walked a full 110 kilometres in one go, making just short breaks for eating and swimming in the middle (Delone 2005, 143. The story is recounted by Nikolskii as well, see Nikolskii 2003, 29).

<sup>72</sup> Neigauz 2000a, 36.

<sup>73</sup> Shafarevich 1994 [1990]d, 221.

<sup>74</sup> Zdravkovska 1989, 28. See also Shafarevich 1994 [1990]d, 219.

the Conservatory very often.[. . .] [A]t that time, before Stalin's death, music had a special place in culture because it was in some sense uncontrollable. Not everybody could understand it.<sup>75</sup>

Shafarevich's close friendship with Sviatoslav Rikhter also made him friends with the family of the outstanding piano pedagogue Genrikh Neigauz [Heinrich Neuhaus], Rikhter's teacher. In her reminiscences Neigauz's daughter mentions how her family and friends got to know Shafarevich through Rikhter and how, "in his student years Slava [i.e., Rikhter] spent much time with Shafarevich, often bringing him to our home. Igor became particularly friendly with Vera [Prokhorova, a relative of the Neigauz children, and a member of the two famous dynasties of pre-revolutionary merchants, politicians and patrons of art, the Guchkovs and the Prokhorovs] and her family."<sup>76</sup> Shafarevich himself mentioned with gratitude that at the Neigauzes he was introduced to music he would not have otherwise heard at that time, Stravinskii's [Stravinsky] Symphony of Psalms, for instance.<sup>77</sup> He also recounted how "at that time, devotees of music gathered in somebody's home and played by four hands or performed in other ways works which were not performed in concerts. It was something like the future samizdat [see Ch. 3], just musical."<sup>78</sup>

Late in 1941, Genrikh Neigauz, a native German, was arrested,<sup>79</sup> and in the same year Rikhter's German father was shot<sup>80</sup> – in both cases the allegations had to do with collaboration with the Germans. In the paranoid atmosphere of the Soviet Union of that time the fact that Rikhter was living with the Shafareviches was evidently not without a risk to their family either.

The few encounters the Shafareviches had with the secret police led to nothing serious, however. In a film made in 1994 Shafarevich, underlining the innocence of the incident as opposed to the numerous tragedies people had to bear at that time, explains how the secret police once searched their home while the family was away at their dacha. Everything was left upside down and the German textbooks of young Igor confiscated as evidence of suspect contacts abroad. However, as Shafarevich said with some amusement, his father was later asked to come and pick them up at the Lubianka, and was even offered an apology for the intrusion. Another time their doorbell rang around 2 or 3 at night – an infallible sign that the men of the state security service were coming to arrest someone. The family anticipated the worst but, as Shafarevich later learnt, the secret police had a habit of ringing the doorbell

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<sup>75</sup> Zdravkovska 1989, 28.

<sup>76</sup> Neigauz 2000a, 35. Militsa Neigauz describes in a charming way how the Neigauzes had a big, lively family and their home was a meeting place for talented young musicians. And as it usually is the case, the circles of cultural intelligentsia were small: the first wife of Genrikh Neigauz had married the poet Boris Pasternak, and the two families had much interaction.

<sup>77</sup> Shafarevich 2003a; 2011a.

<sup>78</sup> Shafarevich 2005b, 205.

<sup>79</sup> Neigauz 2000b.

<sup>80</sup> Prokhorova 2000, 46.

not of the unsuspecting victim but that of a neighbour of the same communal apartment.<sup>81</sup>

Yet another account of Shafarevich from 1942 onwards is from the pen of the writer Iurii Nagibin, albeit written much later. He describes the Prokhorov home, where the circle of friends of the Prokhorov girls, Rikhter, Shafarevich and Nagibin himself regularly gathered<sup>82</sup> as a place where “Pasternak was deified – here a pure spirit of universalism reigned”. “These were”, he continues, “the last Mohicans of the spirit, intelligence, and joyful kindness, which had matured in the soil of the society of pre-revolutionary Moscow’s patrons”. Here, he confesses, he was almost healed of his personal traumas.<sup>83</sup>

To Shafarevich, however, Nagibin is anything but willing to extend his nostalgic admiration. He is introduced as “a most unattractive personality”; a brilliant mathematician who turned into the author of the infamous *Russophobia* – “a theoretician of Jewish pogroms and one of the fiercest Judophobes of the country”. Nagibin explains that at the time Shafarevich

was still hiding [his alleged anti-Semitic convictions] or had not yet been affected by the sacred faith of his teachers [here Nagibin mentions the academicians Pontriagin, “a zoological anti-Semite”, and Vinogradov, “the grandfather of new anti-Semitism”].

“But”, he continues,

one thing sounded the alarm: he did not have the naturalness and openness characteristic of us all. He played a man of another epoch, thrown by chance into our coarse reality, from which he defended himself with an antiquated slightly off-putting politeness, whistling the ‘s’ after pronouncing a word like in the old times, narrowing his eyes with the absent-mindedness of a person who has woken up in the middle of the night. Later he added to this some madness.<sup>84</sup>

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<sup>81</sup> Shafarevich 1994b.

<sup>82</sup> Close friendships on this scale were relatively rare at the time. As Alekseeva writes: “During the Stalin era, when informing was the norm, informal socialising between people was cut to the minimum. In Moscow were practically no homes where there were many regular guests. As a rule, active socialising was usual among just two–three families.” (Alekseeva 1992, 199.)

<sup>83</sup> In Nagibin’s posthumously published autobiographical *Darkness at the End of the Tunnel*, cited here, he relates how his own identity as a Jew evolved in the Soviet reality, particularly through what he experienced as traumatic incidents of hostility or distrust towards Jews. He also explains in detail how he was later devastated by the discovery that his real father had been a Russian just like his aristocratic mother, not a Jew as he had believed, and how he refused to feel he belonged to what he perceived as the mass of Russian idiots and sycophants.

<sup>84</sup> Nagibin 1994, 34–35. In this piece written after the scandals around Shafarevich’s *Russophobia* Nagibin assesses Shafarevich primarily in the light of the theme of Jewishness: “Shafarevich [i.e., Shafarevich], dark-haired, dark-eyed and with a darkish skin, makes believe he is a Belorussian but it seems to me that he is typical proof of Weininger’s law: anti-Semites are often people carrying a Jew in themselves.”

With an eye on the future twists of Shafarevich’s life, companionships and reputation(s), it is not without interest that much later Aleksandr Solzhenitsyn published a piece on Nagibin, Solzhenitsyn 2003a. His assessment is not very flattering, but the reader will hardly be much more sympathetic to the protagonist of the review than is Solzhenitsyn. This is because Solzhenitsyn, himself sparing in his use of adjectives, reproduces in direct citations from Nagibin an amazing wealth of dismissive

## The Joyful Discovery of the Mathematicians' International Brotherhood

In 1943, at the age of 20, Shafarevich started to work in the Steklov Mathematical Institute of the Soviet Academy of Sciences, “Steklovka”. In 1944 he began to teach at the Moscow State University at “Mekh-Mat”, the mechanical mathematical faculty.<sup>85</sup> These were the two centres of Soviet mathematics. In 1946, at the age of 23, he defended his doctoral dissertation in physical-mathematical sciences.<sup>86</sup> In practice this meant that he acquired the title of professor. In 1947 he became a senior researcher at Steklovka, and was to become the director of its algebra section in 1960.<sup>87</sup>

On various occasions Shafarevich has spoken about the atmosphere of the Soviet mathematical world as he came to know it. Prior to 1938 when the 14-year-old Shafarevich started his studies at the university, the field had been developing rapidly. Even during the infamous thirties mathematicians had been relatively free to have contacts with foreign colleagues, to travel abroad to conferences and to receive foreign journals. However, about 1938, at a time so fateful for all the Soviet intelligentsia, mathematicians fell into complete isolation which was to last until Stalin's death in 1953. Shafarevich recounted afterwards,

In any branch that I would start working in – first algebraic number theory, then algebraic geometry – there was almost no one to talk with. And in order to create a circle of people with whom to communicate, it was simply necessary to seek out young people and give them the taste for it. [...]

In my recollections it is hard to tell [...] apart [the youth of Soviet mathematics, and my own youth]. I remember the mood. It is beautifully described by Goethe in *Faust*. He says:

*Da Nebel mir die Welt verhüllten  
Die Knospe Wunder noch versprach.*<sup>88</sup>

Much later, in 1983, the respected German *Journal für die reine und angewandte Mathematik* wrote on the occasion of Shafarevich's 60<sup>th</sup> birthday that he belongs to

those mathematical personalities of this century to whom our science owes decisive advances. A great part of his life work is dedicated to the scientific school he founded (in number theory and algebraic geometry). This school includes outstanding mathematicians and its scientific influence extends outside of Moscow and the Soviet Union over the whole mathematical world.<sup>89</sup>

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portrayals of a great number of people, starting with his own wives, colleagues, childhood friends and ending with the whole of the Russian nation – a word Nagibin finds, incidentally, too flattering for the Russian “population”. Reminiscing of “Shafarevich” too, Nagibin further characterises him as “an egoist and egocentrist from top to toe” and “a cold-blooded good-for-nothing”.

<sup>85</sup> Shafarevich 2002a.

<sup>86</sup> The Russian degree of *doktor nauk* is considerably more prestigious than the Western PhD. In 1976 Miles Reid illustrated its weight by explaining that, at the time he wrote, there were only 4 or 5 algebraic geometers holding this degree in the Soviet Union (Reid 1976).

<sup>87</sup> *Kto est kto*, 727.

<sup>88</sup> Zdravkovska 1989, 17.

<sup>89</sup> “Igor R. Shafarevich”, 120.

A festschrift for Shafarevich states that research in number theory, algebra and geometry has been flourishing in Moscow since the Second World War particularly thanks to his accomplishments.<sup>90</sup> Igor Dolgachev elaborated on this by saying that

During his long mathematical life Shafarevich [has] published no more than 50 research papers, but the influence of many of them on the development of number theory, group theory and algebraic geometry is difficult to overestimate.<sup>91</sup>

With the growing interest in the atomic bomb, the mathematical world experienced another change:

During the war [. . .] the salaries [of scientists] increased all of a sudden by a factor of 2 or 3. The prestige changed very much. Scientists began to be written about. Most prestigious, of course, was to be a physicist. The next place, probably, was held by mathematics.<sup>92</sup>

A rare account of Shafarevich's political views during the Stalin years (some-time after 1948) is from the pen of Ilia Piatetskii-Shapiro [Ilya Piatetski-Shapiro], his former student, who became a well-known mathematician himself.

There was little room at the university for having thorough discussions, so they met at Shafarevich's home, as was usual at that time:

I remember that our conversations were not restricted to mathematics, and after finishing our mathematical discussions we frequently turned to politics. Shafarevich, a son of a professor, was a well-educated man who knew French and German. Even then, he made it clear that he disliked the October Revolution. Of course, he did not say it explicitly, which would have been dangerous. At that time, during Stalin's rule, no one could dream of being a dissident. However, it was clear to me that Shafarevich had negative feelings for Communism. Of course, he never was a member of the Communist Party. More interestingly, he was against all revolutionary movements in principle. At that time, Dostoevskii was not easily available in Russian, but Shafarevich quoted the very negative depiction of revolution from the famous novel '*Devils*'.<sup>93</sup>

Another small but not uninteresting fragment of reminiscence is by Militsa Neigauz, about 1955. She relates that when one of the regular visitors in the Neigauz house, Vera Prokhorova, was imprisoned, her friends and relatives sent an appeal to the authorities for her release and rehabilitation. The appeal was initiated by Nagibin and signed by him, Genrikh Neigauz, Boris Pasternak, Sviatoslav Rikhter, and Shafarevich.<sup>94</sup> Shafarevich also gave her a fur coat when she returned from the camps without almost anything at all. As Neigauz explained, such solicitude was very typical of Shafarevich in general.<sup>95</sup>

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<sup>90</sup> Artin & Tate 1983. See also Tikhomirov 2000, which gives a very good overall picture of Shafarevich's great significance for Moscow mathematics.

<sup>91</sup> Dolgachev 1989.

<sup>92</sup> Zdravkovska 1989, 27.

<sup>93</sup> Piatetski-Shapiro 1993, 204–205.

<sup>94</sup> Neigauz 2000a, 35.

<sup>95</sup> Neigauz 2006.

The late 1940s had brought persecutions to the mathematical world, and they touched students and teachers alike. Shafarevich recalls,

there were years when only one or two, and sometimes not one student finishing Me[k]h-Mat would be left to do graduate work. In a big auditorium [...] a list was put up of all the students whom the professors proposed for graduate work [...] Then, one after the other, they were crossed out as unsuitable [by some sort of a committee consisting of representatives of the “dekanat”, i.e. the chairman’s office, and the local party organization. S. Z.]. The list consisted of 30–40 people.<sup>96</sup>

In 1949 Shafarevich was also dismissed from the university, to be hired again in 1953.<sup>97</sup> He says of this:

in 1949, many were fired; it was a dark atmosphere at Me[k]h-Mat. It seems that if a teacher had many students, that was considered bad. [...] Many that had part-time positions were fired. It is not as though we were stripped of our jobs. [...] I continued to work in the Steklov Institute. Foreign mathematicians phoned me asking whether I couldn’t feed my family. That was never the case. In 1949 there was no rule that you couldn’t teach somewhere else.<sup>98</sup>

These last years of Stalin’s regime are also remembered as the time of notorious suspicion of Jews, to be discussed in Chapters 5 and 6. Reminiscing about the world of Moscow mathematics, Dmitrii Fuks [Dmitry Fuchs], another prominent mathematician and a Jew from his father’s side, commented,

Once (probably it was in 1968) I spoke to I. R. Shafarevich, and mentioned without any particular motive the year 1950 ‘when all the Jewish professors were driven from Mekh-Mat.’ ‘Who told you this?’ Shafarevich asked with irritation. ‘Possibly it was Gelfand.’<sup>99</sup> I did not know what to say. Certainly, it was not Gelfand who had told me this, at least, for the first time; but it seemed to me that everybody knew it. ‘It is true that Gelfand had to leave Mekh-Mat then,’ Shafarevich continued, ‘but I had to do the same without being a Jew. They simply fired all the good mathematicians, Jews or not Jews.’ Now it seems to me that Shafarevich was more right than might seem at first glance. Mekh-Mat would never have been driven into its present miserable state if the policy of its authorities had been directed only against Jews.<sup>100</sup>

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<sup>96</sup> Zdravkovska 1989, 20.

<sup>97</sup> Shafarevich 1980, back cover.

<sup>98</sup> Zdravkovska 1989, 24.

<sup>99</sup> Izrail Gelfand was one of Shafarevich’s first teachers, as well as a close colleague of Fuks, and a Jew. As to Shafarevich’s relations with Gelfand, Militsa Neigauz, likewise a mathematician, has recounted in 2006 that Shafarevich not only had many joint projects with him but that their relations were always warm and respectful (Neigauz 2006).

<sup>100</sup> Fuchs 1993, 215. Fuks explains further: “Russia is a very big country, and if you were not to admit the Jews to Mekh-Mat, or, say, left-handed, or blue-eyed ones, or apply some other arbitrary criterion, but were to honestly choose the best ones from the rest, then this would be highly unjust and immoral but would not have had such a terrible effect. The only way to deprive Russian mathematics of talent is to struggle against the talent, and this is exactly the struggle we were involved in. For example, those who graduated from the be[s]t Moscow mathematical high schools were always regarded by Mekh-Mat’s authorities as Jews, irrespectively of their actual origin. And

During the Khrushchev era, in 1958, five years after Stalin's death, Shafarevich was allowed to travel to a mathematical congress in Edinburgh: "There I met people whom I had never seen but it was like being at home. They knew some of my works in detail. I also knew their works. It was an unusually friendly encounter. It continued also afterwards." In the same connection, Shafarevich speaks about the warm and meaningful feeling of cosmopolitanism, of some sort of international scientific brotherhood shared by mathematicians.<sup>101</sup>

In that year, 1958, Shafarevich was appointed corresponding (i.e., associate) member of the Division of Physical-Mathematical Sciences of the Soviet Academy of Sciences – the second youngest Soviet scientist after Andrei Sakharov to be nominated. However, he was to acquire the title of academician only nearly 35 years later, in December 1991, when the Soviet Union was disestablished and the name of the academy changed into the Russian Academy of Sciences. In 1959 Shafarevich was given the Lenin Prize for his fundamental contributions in developing the theory of Galois.<sup>102</sup>

## Reminiscences About Great and Controversial Mathematicians

In later days Shafarevich wrote several articles about his teachers, colleagues, students and friends in Soviet mathematics.<sup>103</sup> These reminiscences are often much more personal and jagged than mere polite eulogies, also conveying much about Shafarevich himself. Among the most vivid depictions are those of Ivan Vinogradov (1891–1983) and Lev Pontriagin (1908–1988). Neither was Shafarevich's teacher, but both were central figures in the world of Soviet mathematics. Nor is either one of them without interest when it comes to the subject of anti-Semitism – something so inescapable in a study concerning Shafarevich. For these reasons, once again, the excerpts here are rather extensive. A discussion of the question of anti-Semitism in connection with Shafarevich will appear in Ch. 8.

Shafarevich describes the personality of Ivan Vinogradov – the head of the Steklov Institute for almost 50 years – as "extremely strange" and "deeply contradictory":

For example, any request addressed to Vinogradov as the director would first crash into his immediate resistance, even when it was perfectly clear that he should be sympathetic to it. As a rule he pulled his head down between his shoulders and spoke as if reciting: 'I don't know. . . I

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this is a great (probably undeserved) honor to Jews that they were a priori included in the category of talented people."

<sup>101</sup> Shafarevich 1990b, 7.

<sup>102</sup> "Shafarevich, Igor Rostislavovich"; *Kto est kto*, 727; "Shafarevich".

<sup>103</sup> Except for those to be cited here are his pieces of Nikolai Chebotarev (Shafarevich 1994c) and Andrei Lapin (Shafarevich 2001b). Many entirely formulaic pieces where Shafarevich is among a group of authors have additionally appeared in *Uspekhi matematicheskikh nauk*.

don't know. . . It's hardly possible.' But after that he would write on a fresh sheet of paper all the circumstances and often acceded to the request, albeit after being jollied somewhat. Such 'negativism' is a well-known abnormal feature. Altogether, the psychology of Vinogradov, as I would judge, included much abnormality. He was terribly lonely. [. . .] The atmosphere of his loneliness could be felt whenever paying a visit to his director's office. Getting out of there was very difficult. Vinogradov made up all kinds of new subjects or lapsed into reminiscences, delaying the moment when he was again left alone by any means possible.

In spite of this, Vinogradov succeeded in creating a brilliant institute, where almost all the best Soviet mathematicians worked at some time. Leading the institute was also, in Shafarevich's words, "constantly one of the major problems of life for Vinogradov. Once he said to me, as if it was self-evident: 'I don't sleep at night and I just keep wondering whom to hire for the institute and whom to move to another position.'" Against the background of Nagibin's sneer about Vinogradov as "the grandfather of new anti-Semitism", it is interesting to see how Shafarevich put the issue in 1991:

In the era of glasnost it seems to me that it would not be right to ignore the accusation often made against Vinogradov: 'He was an anti-Semite!' The question is about a term which is very elastic, and without substantiating it, such an accusation appears to me altogether senseless. But, it seems to me, in some interpretations it can be applied to certain aspects of the activity of Vinogradov. Above all for the reason that he loved to speak about the subject, saying, for example, that in his opinion the Jews hold the most of the leading posts in many institutes in the academic world and that only thanks to his efforts has this not happened in the Mathematical Institute. Nevertheless, when it came to real actions these views were expressed in softened form. This is evidenced, for instance, by the fact that practically all leading Jewish mathematicians in the Soviet Union worked for long periods in 'Steklovka', among them Bernshtein, Gelfond, Liusternik, Shnirelman, Naimark, and many others. He discerned a great mathematical talent with some sort of a sixth sense, and for him talent surpassed all other considerations. In less obvious cases he was, doubtless, not objective in this respect. Although it was possible to argue with him and at times even win him over. [. . .] Later it was hard to understand when it was Vinogradov's national prejudice that was forcing its way through and when it was the capriciousness and negativism peculiar to him. (It is possible that his negativism was simply a defensive reaction; fear of becoming subject to unfamiliar influence.) For instance, I simply did not manage to persuade him to take into the institute one very good algebraist (a Russian), against whom he had only one objection: 'And why does he have long hair?'

In old age Vinogradov, so Shafarevich says, became even more capricious and refused categorically to resign, even though he should have done so long since. But, "for him it was equal to a refusal of life." He concludes, "As it often tends to be, during the lifetime of Vinogradov mathematicians paid most attention to the macabre situations having been caused by him. Now, as all of that recedes into the past, it becomes clearer how much we owe him." Here Shafarevich refers to Vinogradov's great accomplishment in making the Steklov Institute a unique scholarly centre.<sup>104</sup>

As to Lev Pontriagin, the subject of Shafarevich's other interesting mathematical portrait, Shafarevich characterised him as a strong personality:

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<sup>104</sup> All citations, Shafarevich 1991d, 97–100, for similar reminiscences of Vinogradov, see 2000f.

Something like this appears seldom, since mathematics (I think, even more than any other field of scholarship) entirely 'suckles' a person, often greatly weakening his expression as a personality. At times it even [...] helps a person to compensate for insufficient growth or even a certain unhealthiness in some part of his personality.<sup>105</sup>

The reason is that "while [mathematics] operates with very abstract concepts, it does not require experience of life – in principle a teenager has access to the mathematical creativity."<sup>106</sup>

A tragedy Pontriagin had experienced in his youth played an enormous role in his life, Shafarevich recounts:

He attempted to fix a primus which exploded and as a result of the burns and unsuccessful treatment Pontriagin lost his sight completely. And the most characteristic thing about Pontriagin was how, with superhuman exertion, he overcame this tragedy. He simply refused to acknowledge it. He never used any technical device for the blind. He always attempted to walk alone, without being accompanied by others. As a result he often had scratches and grazes on his face. He learnt to skate and ski, went canoeing. [...] Perhaps the hardest thing Pontriagin did was overcome the feeling of defectiveness or inadequacy that might have arisen because of his misadventure. He never gave the impression of being unhappy, a victim. On the contrary, life for him was extremely exciting, full of struggle and victories. [...] Even such a sensitive barometer as his relations with women and their relation to him was evidence of this.<sup>107</sup>

Shafarevich also describes Pontriagin as a fearless personality in disagreements with authorities and defending colleagues in trouble. In old age he was engaged in the struggle against the project to divert the great Siberian rivers.<sup>108</sup>

Shafarevich also brings up Pontriagin's alleged anti-Semitism. He considers that whenever Pontriagin perceived that the suppressive measures of the authorities concerned not only Jews but rather, were the ordinary Soviet arbitrariness everyone had to suffer from, he was deaf to the argument that Jews were persecuted. Here Shafarevich brings up a citation from Pontriagin's autobiography:

[A postgraduate of mine] stunned me with one of her pronouncements. She complained that during that year very few Jews had been accepted for postgraduate studies, no more than a quarter of all those accepted. After all, she said, never before had they been less than half.

Shafarevich continues,

For my part I can add that I have already lived a very long life in the sphere of mathematics. I have taught thirty years at the university, had a great number of students, of many different nationalities besides; Russians, Ukrainians, Germans, Jews, Tatars. . . and laying my hand on my heart I can say that I have not been able to assert a special prowess for mathematics among one nationality or another. The national make-up of the students or postgraduates has apparently been defined by social factors.<sup>109</sup>

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<sup>105</sup> Shafarevich 1998a.

<sup>106</sup> Shafarevich 1996 [1989], 391.

<sup>107</sup> Shafarevich 1998a.

<sup>108</sup> Ibid.

<sup>109</sup> Ibid. So far it suffices to note Shafarevich's words and stances. This issue will be handled more thoroughly when the time comes to discuss Shafarevich's *Russophobia* and the scandal about it in

All in all Shafarevich considers that Pontriagin “may not be suspected of any underlying racial or national antipathies, of which the surnames of his friends and colleagues alone bear witness.”<sup>110</sup>

In another article about the mathematician Vladimir Rokhlin, who was Jewish, Shafarevich mentions how Pontriagin managed to get him freed from the Soviet interrogation camp where he had been taken after the war after having been liberated from a German concentration camp. Rokhlin had not been Pontriagin’s student but Pontriagin knew of his troubled position and knew him to be a gifted mathematician:

Pontryagin [. . .] was trying to get [Rokhlin] out and put him to work at the Mathematical Institute as his assistant. The administration in the Presidium [of the Academy] did not want to have anything to do with such a doubtful situation connected with a concentration camp. Therefore, they sometimes lost the necessary documents, and sometimes said that they had sent them when they had not. But Pontryagin resolved not to let the matter lie, and he checked each paper: if it had been lost, then he wrote a new one; if they told him they had sent it, then he checked to see whether he had received it. And then he was back again with the same purpose. In the end Pontryagin got what he wanted (such extraordinary persistence was typical for him). Rokhlin started working at the institute.<sup>111</sup>

Incidentally, Shafarevich describes Rokhlin as a very similar personality to Pontriagin – straightforward, fearless, reliable, and with a strongest sense of justice:

Rokhlin possessed [. . .] a feeling of independence of and even resistance to the authorities. Where most people would agree to satisfy some stupid requirement rather than let it bother them, Rokhlin refused to do things that clearly went against common sense.<sup>112</sup>

Shafarevich’s depiction of Pontriagin’s character and his claim that Pontriagin was equally critical of everybody, but with good reason, gets credence with Pontriagin’s account in his memoirs of how he dismissed Shafarevich from the Academy’s Council of Editing and Publishing.<sup>113</sup> True, the first mention of Shafarevich is positive; Pontriagin recalls how, in another International Mathematical Congress held in Stockholm in 1962, Shafarevich had been the only one among a group of Soviet mathematicians to bother to see that Pontriagin, unable to help himself because of his blindness, got something to eat from a Swedish smorgasbord wolfed down by greedy Soviet colleagues.<sup>114</sup> Then, speaking about the early 1970s, Pontriagin mentions that he found Shafarevich’s suggestion to hire an inexperienced mathematician of minor importance to write a textbook for schools totally unacceptable. He continued bluntly that for this reason he decided

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the international scientific community; in that connection the issue of discrimination of Jewish students was raised.

<sup>110</sup> Shafarevich 1998a.

<sup>111</sup> Shafarevich 2001a, 237.

<sup>112</sup> *Ibid.*, 235.

<sup>113</sup> Pontriagin 1998, 175–176.

<sup>114</sup> *Ibid.*, 136.

to dismiss Shafarevich from the council.<sup>115</sup> However, neither Shafarevich's nor Pontriagin's writings indicate that Pontriagin's decision embittered Shafarevich in the least. In fact, as one final citation suggests, he values Pontriagin's discernment highly. The excerpt also sheds light on the element of beauty in mathematics Shafarevich so persistently keeps highlighting:

A completely new style of teaching mathematics was introduced in secondary schools in the 1970s and new textbooks cardinally different from the old ones were compiled. The principle that was applied, with some delay from the West, comprised a departure from intuition and utter formalisation of expression. Moreover, the problem was deeper than may seem at first sight. The matter is that mathematics (the mathematics taught in school, as well) has in addition to its 'applied' meaning an aesthetical element. This is a very peculiar beauty – the beauty of ideas. For a creatively working mathematician it is often more convincing than formal reasoning so that he considers, 'this reasoning is so beautiful that it has to be true.' The sense of the beauty of mathematical reasoning is open to practically everybody and is an important part of universal culture. The new system of teaching, however, broke this down.<sup>116</sup>

It was Pontriagin who achieved a breakthrough in convincing the authorities to amend the suggested reforms. This Shafarevich considers one of his most valuable accomplishments.

Shafarevich's mathematical works have been translated into several languages. He is possibly best known for *The Number Theory*, co-authored with Zenon Borevich [Borewicz], which systematises many central questions of the theory of algebraic numbers and is considered as a classic. Another book of great popularity is his *Foundations of Algebraic Geometry*. In 1989 his collected works were published in English by Springer<sup>117</sup> and in 1996 they were published in Russian.<sup>118</sup>

He was elected to The London Royal Society, the German Academy of Natural Scientists Leopoldina, the Lyncean Academy in Italy, the Serbian Academy of Sciences and Arts, the US National Academy of Sciences, the American Academy of Arts and Sciences, and he has an honorary membership in the London Mathematical Society. Shafarevich has twice been a member of the Prize Selection Committee of the world's most prestigious mathematical honour, the Fields Medal.<sup>119</sup> In 1970–1973 he was the chairman of the Moscow Mathematical Society.<sup>120</sup> He holds many awards and prizes, among them the Heineman Prize of the

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<sup>115</sup> Such directness seems to have been very typical of Pontriagin. On the occasion of recounting how he dismissed Shafarevich, he claims that dismissing one Zeldovich, "academician, triple-Hero of Socialist Labour", was particularly hard because of his high honorary titles, even if "his book was patently bad, never have I come across anything worse, and senseless." (Pontriagin 1998, 175–176.)

<sup>116</sup> Shafarevich 1996 [1989], 393.

<sup>117</sup> Shafarevich 1989a.

<sup>118</sup> Shafarevich 1996e.

<sup>119</sup> Selection Committees.

<sup>120</sup> Demidov et al. no date.

Göttingen Academy of Sciences, and an honorary doctorate of the University of Paris.<sup>121</sup>

To a trained mathematical ear, Shafarevich's name is familiar, among other things, for the Shafarevich–Tate [or Tate–Shafarevich] group, known also as the Sha [III] group according to his Cyrillic initial, the Shafarevich–Weil theorem, the Shafarevich reciprocity law, the Artin–Hasse–Shafarevich exponential map, the Shafarevich basis of the group of principal units, the Golod–Shafarevich theorem on class field towers, the Grothendieck–Ogg–Shafarevich formula for arithmetic surfaces [or for curves over local fields], the relative Shafarevich theorem, the Shafarevich conjecture for holomorphic convexity [or for surfaces of general type over function fields], the Shafarevich complex, the Kostrikin–Shafarevich conjecture (Ko-S 66), the Shafarevich basis in the Milnor K-groups of a multidimensional local field, the Néron–Ogg–Shafarevich criterion, the Rudakov–Shafarevich lattice, and the Shafarevich maps.

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<sup>121</sup> “Shafarevich, Igor Rostislavovich”; *Kto est kto*, 727; Zdravkovska 1989, 16. See also “K 70-letiiu Igoria Rostislavovicha Shafarevicha”; Shafarevich 1994b; Demushkin et al. 1984; Kostrikin 1995; Parshin et al. 2003.



<http://www.springer.com/978-3-0348-0214-7>

The Vexing Case of Igor Shafarevich, a Russian Political Thinker

Berglund, K.

2012, XIV, 542 p., Hardcover

ISBN: 978-3-0348-0214-7

A product of Birkhäuser Basel