

Opinion

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Admission to the Mathematics Faculty in Russia in the 1970s and 1980s

A. Vershik

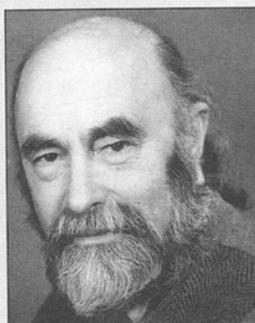
For a number of years now, the universities of the former Soviet Union have been free of party committees (partkom). These committees were made up of individuals whose job was to see that the party line was followed, and above all to watch over the purity of the cadres—the loyalty of professors and students, the blamelessness of their curricula vitae, and preferment to the necessary people. Now the offices of party committees have been allotted to computing centers, centers for “intellectual investigations,” and so on. Many of their present occupants occupied them in the past, but now they investigate problems of the interaction of science and religion, they criticize Marxism, they invite new-wave politicians and psychics, they talk about their past difficulties at work.

The one thing they don't talk about is their cadre work during the period of stagnation. The higher partkom secretary of one of the finest Russian universities (Leningrad), who very carefully carried out party directives about the purity of the cadres, is now the director of a cultural center where he organizes evenings of Jewish culture. The prorector of another university (Moscow), once extremely active in all official campaigns and purges and in the organization of “selections” in university admissions, has now become an ardent democrat and an organizer of the most progressive projects.

Of course this is wonderful—only, one may still ask, “Why, gentlemen, are you silent about how things were done, how you managed education, admission to universities, selection of cadres?” It would be useful for the educational community to know how and why the sciences lost hundreds, and possibly thousands, of indubitably talented individuals, potential leaders, hard workers profoundly dedicated to learning, whose lives have been distorted, often irreparably so.

One of the most important objectives of cadre politics at the leading universities, particularly in the capi-

tal, seems to have been to limit the admission of Jews and members of certain other national minorities. Of course, this was not the only objective. It was important not to admit political pariahs (and their children!) as students, aspirants, scientific workers, and professors. Likewise, it was important to help children and relatives of the nomenklatura (party and government officials, KGB) who in reliability were classified with children of work-



A. Vershik



A. Shen

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Alexander Shen was born in Moscow in 1958 and did all his studies there. His thesis on Kolmogorov complexity, under V.A. Uspenskii, was defended in 1985. He has been employed since 1982 in research at the Institute of Problems of Information Transmission. He has also worked since 1977 as a volunteer teacher in high school of special classes in mathematics, programming, and physics.

ers — who, in the “proletarian” state, enjoyed a mandatory quota of admissions.

Once emigration was permitted there was, so to say, an official pretext for not accepting Jews or assigning them to prestigious work, for not providing incentives, awarding degrees, etc. Thus one killed two birds with one stone: the country got rid of some of the disaffected, and at the same time one restricted them at home.

But there was one more objective, perhaps the most important one, that one never talked openly about, namely *holding down the number of talented people*. The grayness of official Soviet Russia during the era of mature socialism did not just happen; it was imposed from above and readily accepted below, and was of a piece with the lack of talent in the whole leadership, relieved only by isolated fluctuations.

To this day we don't know the details of the secret instruction of the early 1970s which (I was told) was more or less to the following effect: restrict or delay the admission to certain post-secondary schools of individuals with ties to states whose politics are hostile to the USSR. Apparently, these could only be Jews, Germans, Koreans, Greeks, and possibly Taiwanese Chinese.

Many of us know quite a few concrete stories. I could tell how unbelievable was my admission to the Leningrad Mekh-mat (Faculty of Mathematics and Mechanics) in 1951, at the height of Stalin's war against the cosmopolites; how crudely they used to fail capable students whom I tried to help enter the university in the 1970s by recommending them to the then dean; how I was prevented from hiring talented graduate students and how these very same students eventually managed to find positions at the most prestigious Western universities; and finally, how in 1985, almost in the time of perestroika, my daughter, with a paper in her specialty accepted for publication, was not admitted to the philological faculty of Leningrad University.

It is surprising that so few testimonies of the hundreds of victims and witnesses have so far appeared in print. All we have is G. Freiman's *It Seems I Am a Jew* with some problems and remarks by A.D. Sakharov, and materials collected by B. Kanevskii and V. Senderov (see below).

It is just as surprising that so far, to the best of my knowledge, none of the hundreds of people from the cadre sections, from partkoms, from the lecturers who conducted purges at the examinations — no one from “the other side” has provided testimony. After all, not all of these people are naive, and not all are absolute scoundrels. Some of them were victims of circumstances. They have hardly any reason to fear revenge, even less court action. All echoes of these tragedies are fading; justice demands confessions. But no — they are silent. Some have become democrats, some profess love of Jews, and some propose to emigrate and ask people whom they had earlier slighted for recommendations. Some maintain that nothing took place. And some don't deny that it all happened but insist that all was done “correctly.”

There are very few documents left. The perpetrators realized that it would not do to leave traces.

When I approached S.P. Merkur'ev, rector of St. Petersburg University (he died a short time ago) and asked him if it was possible to see the archives of the party committee that dealt with these matters, he offered to help me but warned that I should not overestimate the change since the putsch; almost all the organizers of these things have retained not only their former positions but also power at the University, and, for example, he was unable to remove one of the particularly odious deans.

I soon saw a confirmation. When I attempted to induce two historians — who had earlier been expelled from the University partly because they tried to object to scandalous practices of the kind I describe here — to work in the archives, they refused, saying, “We are afraid that ‘they’ will get us.”

In 1987 I brought an article about a case of admission to the progressive weekly *Moscow News*. The head of the department told me, “We can't print an article dealing with this topic. There will be a flood of angry letters.”

But I hope that the conspiracy of silence won't last forever. I am glad that I was able to persuade Alexander Shen, who has worked a lot with university and secondary students, to write of the materials he has collected.

Mathematical audiences (not only in the West) will find it interesting to learn some details and solve the little problems that a school graduate was supposed to solve in a few minutes. Keep in mind the young boy or girl who has made a commitment to learning, who may have good basis for this decision (participation in olympiads, math circles, and so on), and who now faces an examiner who has his instructions and his arsenal of problems. These examiners and admissions chairs were generally boorish and treated the school graduates shamefully. As is often the case, we know the names of those who carried out the instructions (the examiners) but not of those who gave them. It would make sense to list the secretaries of admissions, deans, and so on, who knew of the scandal and covered it up, right to the top of the party-KGB structure. Even these names are not such a deep secret.

We have used here materials only on admissions to Mekh-mat at Moscow State University and only from the 1980s and, in part, the 1970s. There are other faculties, other universities and institutes. And there are problems of defenses of dissertations (VAK), of employment of young scholars, and many others.

Is there anything surprising about the drain of Russian science, emigration, apathy, and the low prestige of official institutes and academies? All of this was predictable from what was done.

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Entrance Examinations to the Mekh-mat

A. Shen

Preliminaries

At one time, discrimination against Jews in entrance examinations to the leading post-secondary institutions, especially Mekh-mat at Moscow State University (MGU), was a fiercely debated subject. I think that we can now afford to look more calmly at the events and see their role in the history of Russian mathematics.

This kind of discrimination was sometimes talked about as if it were the main, and virtually the only, blemish on the otherwise spotless reputation of the national party. This tone was sometimes understandable (for example, one had to talk this way in complaints about Mekh-mat submitted to the Committee of Party Control of the Central Committee). In reality, of course, this was just one of many injustices, some far worse.

I entered the Mekh-mat in 1974, began my graduate studies in 1979, and completed them in 1982. I have worked in mathematical schools from 1977 until today. I will write mostly about things I have had direct contact with. Let us hope my account will be supplemented by others.

In many countries, including Russia, the proportion of Jews is appreciably greater among scholars than in the whole population. In entrance to mathematical classes and schools (with equal requirements for all applicants), the proportion of Jews among those who passed the examinations (and among those taking them) is significantly higher than in the population as a whole. Whatever the meaning of this phenomenon, it has to be kept in mind.

Elimination of Undesirable School Graduates

After certain events in 1967 (the well-known letter of 99 mathematicians in defense of Esenin-Volpin) and especially in 1968 (mathematicians protesting the intervention in Czechoslovakia), the situation at the Mekh-mat worsened significantly. I.G. Petrovskii ("the last non-party rector of MGU"), who had done many good things, died in 1973. His successor, R.V. Khokhlov ("the last decent rector of MGU"), perished in 1977. By 1973, the "special program" of elimination of undesirable graduates, especially Jews, was in full swing. The category of "undesirables" included the (small) group of those who didn't belong to the Komsomol. From that time on and until 1989–1990, when this practice was halted, the situation stayed much the same. The number of victims did change: in later years, the potential victims, aware

of the barriers, didn't try to apply. Also, in the mid-80s there was a time when Mekh-mat students — unlike students at other institutions — were drafted. This reduced the number of applicants to Mekh-mat.

Yet another form of discrimination began in 1974. It was open but no less unjust. It involved a two-stage competition for Muscovites and non-Muscovites (the same number of places were reserved for each group although non-Muscovites were more numerous). The ostensible reason was the shortage of rooms. An applicant who did not ask for a place in a hostel (but had no close relations in Moscow) was, however, also classified as a non-Muscovite. The harm from this discrimination was offset by the lower level of the competition for non-Muscovites.

During the period of anti-Jewish discrimination the following people were among the responsible officers of the admissions committee (in various capacities): Lupanov (current dean of the Mekh-mat), Sadovnichii (current rector of MGU), Maksimov, Proshkin, Sergeev, Chasovskikh, Tatarinov, Shidlovskii, Fedorchuk, I. Melnikov, Aleshin, Vavilov, and Chubarikov.

How Things Were Done: The Procedure

Direct discrimination was a natural concomitant of the shabby conduct of the examinations. The written part of the examination in mathematics consisted of a few simple problems that required only computational accuracy, and one or two very involved and artificial problems (the last problem was usually of this kind). Only "pure plusses" were counted. A flaw in the solution (sometimes invented and sometimes due to the checker's failure to understand the work) meant loss of most of the credit for the problem. As a result, most of the applicants got threes and twos (out of five); the examination was almost totally uninformative.

Now we come to the oral part of the examination in mathematics. Even if there were no discernible discrimination, it is virtually impossible for all examiners to make the same demands on applicants. The questions on the tickets are very general and imprecise, and the requirements of the examiners are necessarily not comparable; all the more so because, as a rule, the examiners had no school contact with the students.

The examinations included writing a composition and passing an oral test in physics. The physics exam was given by members of the MGU Physics Faculty. It was not a particularly brilliant faculty, and the task of giving examinations was assigned to its less brilliant members.

Some Examples. In 1980 no credit was given for the solution of a problem (an equation in x) because the answer was in the form " $x = 1; 2$ " and the written answer was " $x = 1$ or $x = 2$ " (the school graduate was Kricheskii, the senior examiner in mathematics was Mishchenko; source: B.I. Kanevskii, V.A. Senderov, *Intellectual Genocide*, Moscow, Samizdat, 1980). In 1988, during an oral examination, a student who defined a circle as "a set of points equidistant — that is, at a given distance — from a given point" was told that his answer was incorrect because he hadn't stipulated that the distance was not zero (the textbook had no such stipulation). The graduate's name was Arkhipov and the names of the examiners were Kovalev and Ambroladze. The 1974 examination in physics included the question: What is the direction of the pressure at the vertical side of a glass of water. The answer "perpendicular to the side" was declared to be incorrect (pressure is not a vector and is not directed anywhere — graduate Muchnik).

Procedural Points. Sometimes the questioning began a few hours after the distribution of tickets (school graduate Temchin, 1980, waited three hours). The questioning could last for hours (5.5 in the case of the graduate Vegrina; examiners Filimonov and Proshkin, 1980; cited by B.T. Polyak, letter to *Pravda*, Samizdat, 1980). Parents and teachers of the graduates were not allowed to see the student's papers (letter 05-02/27, 31 July 1988, secretary of the admissions committee L.V. Yakovenko). An appeal could be lodged only within an hour after an oral examination. The hearing involved in an appeal was extremely hostile (in 1980, A.S. Mishchenko faulted graduate Krichevskii at the hearing for appealing against precisely those remarks of the examiners where he (Krichevskii) was clearly in the right; Kanevskii and Senderov, *op. cit.*).

How It Was Done: "Murderous" Problems

An important tool (in addition to procedural points and pickiness) was the choice of problems. Readers who are mathematicians can evaluate the level of difficulty of the problems below by themselves. We can assure non-mathematical readers that the level of difficulty of the "murderous" problems is comparable to that of the All-Union Mathematical Olympiads, and many of them are olympiad problems. (For example, the problem N2 of Smurov and Balsanov turned out to be the most difficult problem of the second round of the All-Union Olympiad in 1985. It was solved by 6 participants, partly solved by 3, and not solved by 91.)

For comparison, we adduce first typical ordinary problems (from the mid-1980s). Grades quoted are out of 5.

First variant (those who solve both parts get a grade of 5).

1. Show that in a triangle the sum of the altitudes is less than the perimeter.

2. The number p is a prime, $p \geq 5$. Show that $p^2 - 1$ is divisible by 24.

Second variant (those who solve the first two parts get a grade of 4).

1. Draw the graphs of $y = 2x + 1$, $y = |2x + 1|$, $y = 2|x| + 1$.

2. Determine the signs of the coefficients of a quadratic trinomial from its graph.

3. x and y are vectors such that $x + y$ and $x - y$ have the same length. Show that x and y are perpendicular.

Now the "murderous" problems. The names of the examiners and the years of the examinations are given in parentheses.

1. K is the midpoint of a chord AB . MN and ST are chords that pass through K . MT intersects AK at a point P and NS intersects KB at a point Q . Show that $KP = KQ$.

2. A quadrangle in space is tangent to a sphere. Show that the points of tangency are coplanar. (Maksimov, Falunin, 1974)

1. The faces of a triangular pyramid have the same area. Show that they are congruent.

2. The prime decompositions of different integers m and n involve the same primes. The integers $m + 1$ and $n + 1$ also have this property. Is the number of such pairs (m, n) finite or infinite? (Nesterenko, 1974)

1. Draw a straight line that halves the area and circumference of a triangle.

2. Show that $(1/\sin^2 x) \leq (1/x^2) + 1 - 4/\pi^2$.

3. Choose a point on each edge of a tetrahedron. Show that the volume of at least one of the resulting tetrahedrons is $\leq 1/8$ of the volume of the initial tetrahedron. (Podkolzin, 1978)

We are told that $a^2 + b^2 = 4$, $cd = 4$. Show that $(a - d)^2 + (b - c)^2 \geq 1.6$. (Sokolov, Gashkov, 1978)

We are given a point K on the side AB of a trapezoid $ABCD$. Find a point M on the side CD that maximizes the area of the quadrangle which is the intersection of the triangles AMB and CDK . (Fedorchuk, 1979; Filimonov, Proshkin, 1980)

Can one cut a three-faced angle by a plane so that the intersection is an equilateral triangle? (Pobedrya, Proshkin, 1980)

1. Let H_1, H_2, H_3, H_4 be the altitudes of a triangular pyramid. Let O be an interior point of the pyramid and let h_1, h_2, h_3, h_4 be the perpendiculars from O to the faces. Show that $H_1^4 + H_2^4 + H_3^4 + H_4^4 \geq 1024 h_1 \cdot h_2 \cdot h_3 \cdot h_4$.

2. Solve the system of equations $y(x + y)^2 = 9$, $y(x^3 - y^3) = 7$. (Vavilov, Ugol'nikov, 1981)

Show that if a, b, c are the sides of a triangle and A, B, C are its angles, then

$$\frac{a+b-2c}{\sin(C/2)} + \frac{b+c-2a}{\sin(A/2)} + \frac{a+c-2b}{\sin(B/2)} \geq 0.$$

(Dranishnikov, Savchenko, 1984)

1. In how many ways can one represent a quadrangle as the union of two triangles?
2. Show that the sum of the numbers $1/(n^3 + 3n^2 + 2n)$ for n from 1 to 1000 is $< 1/4$. (Ugol'nikov, Kibkalo, 1984)

1. Solve the equation $x^4 - 14x^3 + 66x^2 - 115x + 66.25 = 0$.

2. Can a cube be inscribed in a cone so that 7 vertices of the cube lie on the surface of the cone? (Evtushik, Lyubishkin, 1984)

1. The angle bisectors of the exterior angles A and C of a triangle ABC intersect at a point of its circumscribed circle. Given the sides AB and BC , find the radius of the circle. [The condition is incorrect: this doesn't happen — A. Shen.]

2. A regular tetrahedron $ABCD$ with edge a is inscribed in a cone with a vertex angle of 90° in such a way that AB is on a generator of the cone. Find the distance from the vertex of the cone to the straight line CD . (Evtushik, Lyubishkin, 1986)

1. Let $\log(a, b)$ denote the logarithm of b to base a . Compare the numbers $\log(3, 4) \cdot \log(3, 6) \cdot \dots \cdot \log(3, 80)$ and $2\log(3, 3) \cdot \log(3, 5) \cdot \dots \cdot \log(3, 79)$.

2. A circle is inscribed in a face of a cube of side a . Another circle is circumscribed about a neighboring face of the cube. Find the least distance between points of the circles. (Smurov, Balsanov, 1986)

Given k segments in a plane, give an upper bound for the number of triangles all of whose sides belong to the given set of segments. (Andreev, 1987) [Numerical data were given, but in essence one was asked to prove the estimate $O(k^{15})$. A. Shen.]

Use ruler and compasses to construct, from the parabola $y = x^2$, the coordinate axes. (Kiselev, Ocheretyanskii, 1988)

Find all a such that for all $x < 0$ we have the inequality

$$ax^2 - 2x > 3a - 1. \quad (\text{Tatarinov, 1988})$$

Given the graph of a parabola, to construct the axes. (Krylov E.S., Kozlov K.L., 1989) [These examiners told a graduate that an extremum is defined as a point at which the derivative is zero. They also reproached another graduate for not saying "the set of ALL points" when he defined a circle as the set of points at a given distance from a given point.]

Let A, B, C be the angles and a, b, c the sides of a triangle. Show that

$$60^\circ \leq \frac{aA + bB + cC}{a + b + c} \leq 90^\circ.$$

(Podol'skii, Aliseichik, 1989)

Statistics — The Mekh-mat at MGU and Other Institutions

The most detailed data on graduates of mathematical schools were obtained in 1979 by Kanevskii and Senderov. They divided the graduates of schools 2, 7, 19, 57, 179, and 444 who intended to enter the Mekh-mat into two groups. One group of 47 consisted of students whose parents and grandparents were not Jews. Another group of 40 consisted of students with some Jewish parent or grandparent. The results of olympiads (see table below) show that the graduates were well prepared, but when it comes to admission, the results are noticeably different.

Mekh-mat at MGU		
	First group	Second group
Total graduates	47	40
Olympiad winners	14	26
Multiple winners	4	11
Total olympiad prizes	26	48
Admitted	40	6

Kanevskii and Senderov give figures also for two other institutions:

MIFI		
	First group	Second group
Total graduates	54	29
Admitted	26	3

MFTI		
	First group	Second group
Total graduates	53	32
Admitted	39	4

Of course, the character of the entrance examinations became known to school graduates, and those suspected of Jewishness began to apply to other places, for the most part to faculties of applied mathematics where there was no discrimination. (One very well-known place was the "kerosinka" — the Gubkin Oil and Gas Institute.)

Mathematical Schools and Olympiads

When we talk about mathematical schools, we exclude the boarding school #18 at MGU. Proximity to the Mekh-mat unavoidably leaves its imprint. In the remaining schools, discrimination by nationality was mostly insignificant.

As a rule, selection of students for a particular class depended largely on the teachers of mathematics and was controlled by the administration to a minor extent. In 1977, in school #91, the administration was presented with a list of students in the math class and did not make any changes. In 1982, in school #57, the situation was more complicated because the school was subject to district administration, and the class list had to be acceptable to the district committee. So some students favored by the district authorities were accepted outside the competition. In 1987, in school #57, "wartime resourcefulness" was successfully applied: Russian names picked at random were added to the list of students sent for approval to the district committee (which did not check which of the students on the list later attended). It seems that after that there were no problems (perestroika!).

One could speculate that discrimination in admissions to the Mekh-mat (very well known to both teachers and students of math classes) and the large percentage of Jews among teachers and students could give rise to a problem of "interethnic relations" (injustice often gives rise to injustice in reverse). I have often heard such speculations, but I am convinced that in most mathematical classes (and the best ones) no such things happened.

As for the olympiads, the Moscow city olympiad was for quite a long time relatively independent from official departments. But in the late 1970s, after Mishchenko's letter to the partkom (it is amusing that recently Mishchenko asserted publicly that he was not in the least involved, but he did not challenge the authenticity of his letter), control of the olympiads was given to Mekh-mat—and, to a large extent, to the very same people who controlled the entrance examinations. It seems to me that the result was not so much discrimination as plain incompetence. (For example, in 1989, after my conversation with the people who managed the olympiad, it became clear that a large bundle of papers got lost. Following urgent requests, it was found. I was even permitted to see the papers of the students in the class in which I lecture. A significant portion of these papers were improperly corrected.)

General Remarks, History

It seems that now practically no one denies there was discrimination in entrance examinations (that is, no one except possibly university administrators—but then they are the people least able to shift responsibility). In particular, Shafarevich mentions this kind of discrimination in his article in the collection *Does Russia have a Future?*

This discrimination causes two kinds of harm. First, many gifted students have been turned away or have not tried to enter the Mekh-mat. In addition to this direct harm, there is also an indirect kind: participation in entrance examinations has become a means of checking the loyalty of graduate students and co-workers, and a criterion for the selection of co-workers. Many distinguished people (regardless of nationality) who refused to be accomplices have not been employed by the Mekh-mat.

The situation has brought protests whose form depended on the circumstances and the courage of the protesters. I probably know only some of the incidents.

In 1979, document #112 of the Moscow group for implementing the Helsinki agreements, titled "Discrimination against Jews entering the university," was signed by E. Bonner, S. Kallistratova, I. Kovalev, M. Landa, N. Meiman, T. Osipova and Yu. Yarym-Ageev. Included in this document were the statistical data collected by B.I. Kanevskii and V.A. Senderov.

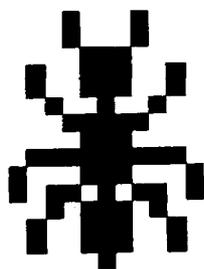
On the basis of the 1980 admission figures, Kanevskii and Senderov wrote, and distributed through Samizdat, the paper "Intellectual Genocide: examinations for Jews at MGU, MFTI and MIFI."

I well remember my reaction, at that time, to the activities of Kanevskii and Senderov (which I now realize was largely a form of cowardice): the result of their collecting data will be that students of math schools will be rejected just like Jews. (This did not happen, although there were such attempts.)

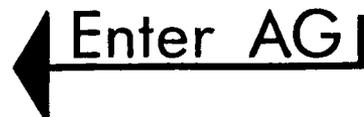
Also, Kanevskii, Senderov, mathematics teachers in math schools, former graduates of math schools, and others, helped students and their parents to write appeals and complaints. Incidentally, this activity was sometimes criticized in the following terms: "By inciting students to fight injustice you are using others to fight your war with the Soviet authorities, and you are subjecting children and their parents to nervous stress." In some cases, the plaintiffs succeeded (by threatening to cause an international scandal or by taking advantage of a blunder of an examiner), but an overwhelming majority of complaints were without effect.

There were attempts to help some very capable students (Jews or those who could be taken for Jews) by undercover negotiations. I myself took part in such attempts twice, in 1980 and in 1984. In one case it was possible to convince the admissions commission that the graduate was not a Jew, that his name just sounded Jewish; and in the second case they closed their eyes to the Jewishness of the graduate's father. It was not a simple matter to find a chain of people, ending with a person who was a member of the admissions committee, each of whom could talk to the next one about such a delicate topic. (In one case I know of, one member of such a chain was A.N. Kolmogorov.) To this day I have two minds about the morality of these activities of ours.

In 1979–1982, on the initiative of B.A. Subbotovskaya and with the active support of B.I. Kanevskii, mathe-



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matics instruction was organized for those not going to the Mekh-mat: once a week, every Saturday afternoon, lectures on basic mathematical subjects were presented to interested students. These sessions took place at the "kerosinka" or at the humanities building of MGU (of course, without the knowledge of the administration — we simply took advantage of the available empty rooms). Xerox copies of the lectures were given out to the students. These studies were referred to as "courses for improving the qualifications of lecturers in evening mathematical schools," but the participants usually called them "the Jewish national university." This went on for a number of years, until one of the participants, and Kanevskii and Senderov, were arrested for anti-Soviet activity; after an interrogation at the KGB, B.A. Subbotovskaya died in a car accident in unclear circumstances. It should be noted that some of the participants in these studies who were not Mekh-mat students (some *were* Mekh-mat students) were very gifted, but very few of them became professional mathematicians.

I remember my reaction, at the time, to the arrest of Senderov and others: well, instead of teaching mathematics they engaged in anti-Soviet agitation, and because of them (!) now everyone has been caught in the act.

Other attempted protests: in 1980 and 1981 B.T. Polyak

wrote to *Pravda* about scandalous practices (without bringing in the issue of anti-Semitism — he must have hoped that he could influence the Mekh-mat within the existing system).

Perestroika began in 1988 and one could openly and safely write about anti-Semitism (even to the Committee of Party Control, then still in existence). Some people, including Senderov, then released from prison, went to various departments, including the city partkom and the city Department of Education, trying in some way to influence the Mekh-mat. "The dialogue with the opposition" took more concrete forms and there were no accusations of anti-Soviet agitation, but the only positive result was that one of the graduates involved was allowed a special examination. After that, the discussion continued inside the university (at meetings of the scientific council of the Mekh-mat, in wall newspapers, and so on). It died down gradually, because discrimination in entrance examinations ceased, and many of the participants in the discussion scattered all over the world.

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