

THROUGH THE PRIZM OF TIME — ANGLES OF REFLECTION

Epilogue to “Comrade Einstein”

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Ich wollt', meine Schmerzen ergössen
Sich all' in ein einziges Wort,
gäb' ich den lustigen Winden,
Die trügen es lustig fort.

Heinrich Heine

Каждый выбирает для себя
Женщину, религию, дорогу,
Дьяволу служить или пророку —
Каждый выбирает для себя.

Yury Levitansky

After the manuscript of this book was sent to the Editorial Office of World Scientific in Singapore I have received quite a few comments from people who had the opportunity to read the draft version. Unfortunately, it is too late now to incorporate these comments in the book. Moreover, some of their authors made a reservation that their remarks are not for public distribution. However, I want to keep relevant excerpts in my records: to ignite a discussion, to show a spectrum of opinions and as an important evidence. I think that this selection nicely

supplements the contents of the book and corrects a few inaccuracies which, unfortunately, slipped into the book.

Alexei Belov-Kanel (February 2, 2005):

- *Perhaps, it is worth mentioning that in the last two years Mech-Mat hired 10 new faculty, and three of them are Jewish. Besides, it seems there is no more discrimination at the entrance examinations.*

Alexei Belov-Kanel (February 16, 2005):

Поскольку важна точность выражений, я отвечаю по русски.

Прошедшее есть история Советской и Российской математики и мы должны знать историю. Для меня было важно выразить благодарность своим учителям и всем тем, кто мне тогда помог. Документы о Народном Университете имеют прежде всего человеческое измерение. Я готов и дальше собирать материалы.

Однако я против какой бы то ни было политики, белых книг и прочего. Если бы это было в конце 80-начале 90-х я - это было бы правильно, подъем же вопросов через 20 лет после того как все закончилось, призывы к тем или иным действиям выглядят странно.

Кроме того, есть и другие аргументы. Роль Садовниченко была велика в борьбе против призыва студентов в армию. Кроме того, вся математическая общественность (кроме отдельных выродков) сейчас борется против преступной школьной реформы. И любой конфликт чрезвычайно вреден. Сейчас, на мой взгляд, не время сведения счетов. В конце концов - почему их не свели раньше? Почему вдруг сейчас?

Иное дело, если бы антисемитизм продолжался. Поведение должно зависеть от нынешнего отношения к евреям.

Как мне кажется, российская научная общественность придерживается той же точки зрения, что и Я. Я могу ошибаться - но в любом случае надо понять общественное мнение.

Теперь о Шафаревиче. Он различал математические отношения (у него было много учеников евреев) и свою политическую философию (достаточно скверную). Антисемитизм на приемных экзаменах равно как и дискриминацию евреев он никогда, насколько я слышал, не поддерживал. Если я не прав, и он упоминается в этом контексте - прошу указать случаи. Его общественная позиция по отношению к математике была такова - он позиционировал себя как чистого профессионала и вел разговор как математик с математиком.

С уважением
Алексей Канель

Andre Reznikov (February 2, 2005):

- In your Foreword you mention Shafarevich among ferocious anti-Semites. This is certainly true. However, before 1987 he seemingly never showed this in public. Moreover, at that time, after his anti-Marxist pamphlet appeared in samizdat, he did not have much power since he had problems with authorities. I do not think it is fair to put him in the same league with the main villains Vinogradov and Pontryagin, even though his views are appalling. I doubt he was involved in any anti-Jewish activities in the 1970s.

Andre Reznikov (February 12, 2005):

- After some thinking, I do not think it would be appropriate for me to defend Shafarevich. You can safely leave him in your foreword, as he deserves to be named. Let him himself defend his views. Surely, there will be defenders of Pontryagin and Vinogradov too.

Andre Reznikov (February 16, 2005):

- My desire to collect materials about People's Jewish University and Bella Abramovna was driven solely by the wish to pay a small tribute to her and record some events of the past.

Personally, I think that present problems of Russia are immediate results of the blank forgiveness unwisely and immorally exhibited by Russian intelligentsia in the 1990's, after the collapse of the Soviet State. But as you wrote, I prefer to hear about it from a distance or, better still, not at all.

By the way, Commander-in-Chief of the anti-Semitic campaign at Physics Department of Moscow University was

Prof. Furtsev. He authored just one scientific paper in his entire career but was the Dean of Physics Department for many years. He was so prominent in this campaign that even Mekh-Mat's Dean Prof. Lupanov was no match to him.

G.K. (February 6, 2005):

- *I am sure that publishing this book will have an effect of opening Pandora's box, and I wish that it could be published and widely distributed in Russia ... At the end of the article "Science and Totalitarianism" A. Vershik mentions the idea of making a White Book. As a first approximation, what do you think of the idea of setting up a website on the Internet asking the readers to send their stories, including the names of those involved in ethnic cleansing?*

In the article by Kanevsky and Senderov the names of some young students who were dragged through all these humiliations are given. It may be a good idea to indicate (if possible) their present status and whereabouts.

In his article Shen writes that the Physics Department of the Moscow University in the 1980s was not exactly an exemplary department. Well, one could add here that one of the reasons for this ongoing failure was ethnic cleansing that had been successfully performed there already in the 1950s when Landau had been driven out (and, by the way, Fock, Leontovich, and Tamm were forced to quit too). They were later replaced by people like A. Logunov or Yu. Loskutov. "Achievements" of the former, as they are advertised on the Physics Department web site, include among other things "creation of a consistent relativistic theory of gravity which eliminates crucial difficulties of Einstein's general relativity." From the very same web site we learn that Prof. Yu. Loskutov managed to prove that black holes cannot be realized. As they say, no comments.

In Kanevsky and Senderov's and Shen's analyses of the entrance examinations to the Moscow University, MIFI and MPTI they emphasize the role of Olympiads. They missed an important detail which I could add based on my own experience. In those days, winners of the All-Union olympiads had crucial benefits at the entrance examinations. Well, to make it to the All-Union level for someone from the periphery he/she had to be among the winners of a Republican Olympiad. In my case, this was Moldavian Olympiad in physics. The unofficial rule was very simple: the winner had to be ethnic Moldavian.

A few words about the entrance examinations. I finished a school in Kishinev in 1978 and thought about applying to Physics Department of the Moscow University. Luckily for me, I got advice from a friend of mine who was a few years older and had already experienced the examination procedure there, with its killer tricks. He explained to me (and later I had a chance to verify that he had been perfectly right) that the Moscow University and FizTech were alike as far as chances of being admitted are concerned. The main difference between the two institutions was that Jewish applicants would be given "2" at one of the math exams at the Moscow University and thus knocked out in the beginning, whereas in FizTech they would let him or her pass all exams but would strike later, during the last session which had an intriguing name "interview." I tried to enter FizTech in 1978, and my score was quite high (5+4 for written and oral math, 4+4 for written and oral physics, and 4 for literary composition). Still, I was not admitted. The official explanation was that I did not pass the informal interview session.

This was my first experience as "Comrade Einstein." Later, the same repeated a few times: when I tried to get admission to the graduate school at Physics Department of the Moscow University, in my job searches, and so on. This

is another story, though.

Anatoly Vershik (February 3, 2005):

• In your Foreword you mention Pontryagin. In 1978 I wrote, for a samizdat magazine Summa, a short review on the scandalous Pontryagin's Autobiography, published in an abridged form in Russian Mathematical Surveys, Volume 33, No. 6 (1978). The full edition of Biography of Lev Semenovich Pontryagin, Mathematician, Composed by Himself is now available too (Prima B, Moscow, 1998). This Pontryagin's writing is remarkable: it is full of venom and animosity to many people who used to be his good friends and colleagues. Below is a quotation from my 1978 review. "Beginning in 1969 L.S. Pontryagin became notoriously known for his open attack, together with I.M. Vinogradov and other comrades in arms, on all live mathematical forces of the country. This unprecedented pressure and persecutions go in all directions: dissertation defense, journal publications, selection of delegates to international conferences and congresses, editorial policies, translation of foreign books – all these regulatory mechanisms are concentrated in the hands of a small group of former mathematicians amongst whom L.S. Pontryagin is one of the leaders. Anti-Semitism of this group was exposed previously." Judge on your own; look at just one sentence from the Biography of Lev Semenovich Pontryagin: "... Zionist circles carry out persistent attempts to present Einstein as the only creator of the theory of relativity. This is unfair."

By the way, in 2002 I published the full Collection of our samizdat magazine Summa, in the St.Petersburg Publishing House Zvezda. The above review is on page 204. This Collection contains other materials related to your book.

A.M. (February 13, 2005):

- I want to give you a good advice: just forget the whole story. Why are you concerned with events that happened long ago in the country to which, in fact, we did not belong? They hated us. We left. Period. The divorce was relatively civilized, not even close to what had happened in Germany. Shouldn't we be thankful?

A. Gorsky (March 4, 2005):

- Dear Misha,
I am in Paris now and Grisha gave me the new book on "Mech-mat" you edited. I have realized that a few months ago I spoke with a person referred to in your book as one of the executioners of the anti-Semitic policy in MGU. It was Maksimov – an old man, approximately 80 years old, with whom I discussed the fate of Petya Selivanov in his office. He is vice-rector now, responsible for educational process. During our conversation I said that they can not throw out Petya from MGU even in spite of his mental disease, according to Russian laws. Surprisingly his eyes "nalilis krovyyu" and he made a ten minutes remark starting with the words "There are no laws in Russia now since the country has been sold to "zhidam"." I saw him for the first time in my life, and it was really terrible – he was completely out of control in these 10 minutes. It was a zoological anti-Semitism I have never seen before. So, some of these guys are still there.

Sergei Tabachnikov (March 9, 2005):

- Dear Misha,
Thank you for sending me the book "...Comrade Einstein". I received it today and cannot stop reading (some parts are

familiar to me). My highest compliments for this work! Is it OK to promote the book? I have many friends and colleagues who will be interested.

I personally know many characters: e.g., in 1978-79, I helped Senderov to run an oral entrance exam preparation seminar at Moscow School No 2. I was then a fresh graduate of Pedagogical Institute; I failed MechMat's entrance exams in 1973. Among the members of my Jewish oral exam group, were some people who have managed to become successful mathematicians; probably the most famous of them is my high school classmate, Sasha Beilinson of University of Chicago. By the way, one of the 5 problems given to me at the oral exam was problem No 1 in Vardi's article.

I wonder whether you ever thought about creating some kind of depository for witness accounts (maybe, a web site). It does bother me that some of the "negative heroes" prosper in the West (I personally know two, one in France and one in the US). Seems to me, the community deserves to know the truth (and, for complete fairness, this could also provide these people a vehicle for repentance — if they wish to repent). Maybe, Sasha Shen would agree to be a mediator of such a web site...

Sergei Tabachnikov (March 10, 2005):

- Dear Misha,

I want to thank you separately for the epilogue. I do believe that the story should be widely known (although I also understand those who want to put all this behind them ... but that's how some people think of Holocaust too). As I mentioned, my personal interest is explained by the fact that I was a victim too, and I personally know many people involved: Fuchs was my advisor and is a close friend of mine up to this day. I taught Belov when he was still called Kanel, at school No 2 when he was in the last grade, in 1979-80. I

know Zelevinsky for more than 30 years, and Shen for about 30 years too.

Before leaving for the US in 1990, I was the head of the Mathematics Section of the Kvant magazine. At some point, I got interested in what had happened in German mathematics under the Nazi, and in 1990 I wrote an article for Kvant (<http://kvant.mccme.ru/au/tabachnikov.s.htm>). I mention this because the story of what had happened in Soviet Union is somewhat similar to the fate of German mathematics, albeit milder.

I do think, one should establish a web site devoted to this issue. I will discuss it with A. Sossinsky, another teacher at People's Jewish University and my predecessor in Kvant, who will be visiting here soon.

Alexander A. Beilinson (March 15, 2005):

- Dear Misha,

I looked at the file of the book yesterday — my deepest thanks for it! I do not have any personal comments for I did not teach at the People's Jewish University. Just one remark: the book presents stories of people “from the top” — those who taught at the University. The voices of the (then) students are not here, which is a true pity. Also: together with Kanyevisky and Senderov, one of the students was arrested, adding considerably to the general feeling of anxiety and distress. As far as I remember, the story around his arrest is quite telling, saying much about the (larger circle of) people involved. A good account would add considerably to the picture.

Mark Sapir (March 15, 2005):

- Dear Misha,

Thank you for composing the book. I have read parts of it before and I knew some stories from the people mentioned in the book. But I am not sure that the book in its present form should be published.

The system does not exist any more. Although I was not admitted to MSU myself (“2” on the written exam), I do not want to get the “bad guys.” After all, I am a Distinguished Professor in Vanderbilt, and they are in Moscow getting \$200 per month.

The only really interesting parts of the book are about the alternative (“People’s Jewish”) university because these pages are about positive and “timeless” things. The parts about anti-Semitic discrimination are weak because the statistical material is very limited. Essentially, there are at most 5–10 people mentioned by names, and they are mentioned several times, so it looks like these are the only people discriminated against. In any case, it seems from the text that only about 100 were affected. To call what happened with these 100 people “genocide” is clearly a misstatement.

There was a similar situation in the leading US universities up to the 1950’s. The materials on People’s Jewish university are not complete either. It would be interesting to see a more complete list of people attending the university, how many of them became professional mathematicians, etc.

Classifying Pontryagin as an “anti-Semite” is not quite correct. He was clearly a sick person at the end of his life (it is enough to look at his autobiography). The problem was not in Pontryagin but in the general structure of the Soviet science which was based on “large schools,” and what can be called “warlords” — the leaders of these schools. In this regard, “good” warlords were not much better than “bad” ones. Unlike Vinogradov and other bad guys mentioned in the book (and many more unmentioned), Pontryagin was a

mathematician; he can be even considered a hero taking into account how much he contributed to math being completely blind.

Yuli Rudyak (March 14, 2005):

- Dear Misha,

My friend sent me a message regarding your book “You just failed you math test, Comrade Einstein.”

I am glad that such book will appear. I have read a part of these materials in Russian, but, say, my colleague Alex Berkovich did not read them before and was very impressed with the book, especially with Part 3 on Bella Subbotovskaya.

A remark concerning the title. As you probably know, Albert Einstein actually failed the entrance exam in Eidgenossische Technische Hochschule, Zurich, and not because of anti-Semitism. Following the failing of the entrance exam to the ETH, Einstein attended a secondary school in Aarau planning to use this route to enter the ETH in Zurich.

In my opinion, this makes the title of your book a little bit vulnerable. But maybe I am wrong, please, consult other people.

A. T. (March 15, 2005):

- Dear Misha,

I fully support your efforts on making this book. I guess it is good that this book is not polished and not smooth. It is good it looks unfinished: the story is not over yet and will never be over.

I do not know why — in my life I met plenty of Jews who tried to “understand,” forgive and finally forget. I

still remember a horrifying book about pogroms in Germany in the medieval times, when our ancestors tried to ease pogromshchiks' task of cutting Jews' heads off...

Mark Sapir (March 16, 2005):

- *Dear Misha,*

We are organizing a conference in honor of Bella Subbotovskaya. Perhaps, some additional information will come out at the conference. I think that your book played a positive role because it gave us the idea of the conference (I heard very little about Subbotovskaya before and did not even know that she had been Muchnik's wife.)

Let me point out another inaccuracy in the book: you write that no university in the USSR would admit Jews in the 1970s-80s. In fact, this was not the case: the Ural State University where I studied, admitted Jews, and so did Saratov University, and many others. In our class (the class that started in 1974) there were about 25 Jews out of 150 students, and the percentage of Jews admitted to our department was much higher than the percentage of Jews applied.

In the class of my sister (started in 1971, later she became a student of Muchnik), the number of Jews was even higher: about 35 out of 100. There was even a problem with their job assignments after graduation. The number of available jobs that did not require security clearance was smaller than the number of Jews in the class. So one Jewish guy was mistakenly assigned to a "secret" lab, and only when he reported to work they realized their mistake (just by looking at him) and told him that the job actually did not exist.

From B. Frenkin (March 20, 2005):

Вина Шафаревича -- абстрактно идеологическая, но как мне кажется, административной вины нет. если упоминать его, то обвинять квалифицировано и правильно, и в том, в чем он реально виноват. Вот цитата из книги И.Р.Шафаревича "Есть ли у России будущее". М.: Советский писатель, 1991, с. 536-537 (о представительстве разных национальностей в престижных сферах):

"С другой стороны, нужно сказать, какими средствами эти проблемы решались ещё недавно - например, в математике. О них, конечно, нужно сказать -- они были чудовищные. Во время экзаменов происходила борьба, война с подростками, почти детьми. Им задавали бессмысленные или двусмысленные вопросы, сбивающие с толку. Это разрушающе действовало на психологию, на психологию их и других подростков, которые видели, что поступающих для экзаменов делят на группы. Когда они видели, например, что из одной аудитории выходят со сплошными двойками, а другая группа с четвёрками и пятёрками.

Создавался класс таких экзаменаторов. Эти люди, конечно, были бы готовы и к другим действиям подобного рода."

Комментарий: Все обвинения Шафаревича в антисемитизме, какие я видел, построены по принципу "Пастернака я не читал, но роман его осуждаю". Кто-то нашёл дешёвый способ проявиться как борец с антисемитизмом, а кто-то и славил людей, которые кому-то были бы опасны, если бы объединились. Сегодня приходится наблюдать, как осуждают "Русофобию" и при этом спокойно взирают, как "эти люди" (см. выше) продолжают занимать руководящие должности на мехмате и в других местах.

Boris Frenkin (August 27, 2005):

- Dear Professor Shifman,

I have looked through "Comrade Einstein..." and the correspondence regarding this book, on your web sites. I suppose this book is very timely and useful in various aspects. I entered Mekh-mat in 1965 and did not encounter the problem of anti-Semitism at that time, but did later, and still more have I seen around. I suppose this was in most cases the problem of the bureaucratic system, not of somebody's personal position, and the same problem could have affected, in principle, any category of people (and did affect, sometimes). This fact makes your book still even more important.

A remark concerning related correspondence seems to be necessary. In my letter (in Russian) concerning Shafarevich's position, which I had sent to Kanel-Belov, the first two sentences are not due to me. Perhaps, they were attached during forwarding of my letter. They somewhat do not agree with the following text. (I suppose there is no Shafarevich's "guilt" in bureaucratic anti-Semitism for a simple reason that he was considered — and actually was — an enemy of the system.)

So, I would like to ask you either to remove the first two sentences of my letter or to make a note that they were added in the course of letter's circulation.

Furthermore, since you posted this letter (sent by me to Kanel-Belov) on your site, perhaps, the following comment (sent by me to Kanel-Belov later) would be in order too.

... Во вторых, и главное, основной вред в этих делах происходит все-таки не от идеологов-теоретиков, а от администраторов-практиков, чаще всего не антисемитов по убеждению, поскольку убеждений у них нет. И эти люди остаются за кадром, пока между собой разбираются носители разных идей. Кстати, действия бюрократии определяются вовсе не тем, что пишут идеологи, а соб-

ственным интересом. Вот что писал Витте о Плеве в своих мемуарах (изд. 1960 г., т. 2, стр. 35):

“Он ... дабы показать какой он “истинно русский и православный”, готов был на всякие стеснительные меры по отношению ко всем подданным его величества неправославным. Вот почему Победоносцев его презирал, так как сам Победоносцев это делал по убеждению.”

Как бы ни относиться к Победоносцевым, в реальности главную проблему составляют Плеве. Об этом я и хотел сказать.

Best regards
Boris Frenkin

★ ★ ★ ★ ★

I want to explain that I do not deny the role of ideology. But ideology is more important for the initiators than for “little guys” who just execute orders. And I suppose that most of Mekhmat “special examiners” were of this kind, be they assistant professors or professors. Of course, the order would not have been issued without the ideological background. But it could not have been implemented without such “little guys” who are not better (while much more numerous) than those who order the music.

M. Shubin (March 29, 2005):

- Dear Misha,

Thank you very much for sending me the book “You failed your math test, Comrade Einstein.” It is indeed a very good idea to publish such a book, and you did a great job collecting the contributions.

I have, however, a comment to your introduction. You stress a widespread character of mathematical schools and mathematical circles in Soviet Union.

You wrote: “Every city had at least one [mathematical school]...”. “Even small towns tended to arrange a “mathematical class” in a school.”

This seems to me a huge exaggeration. There were mathematical schools in Moscow and Leningrad, of course, but not in smaller places. I went to school in Kuibyshev, not a small city (then it had about 800,000 population, about 1.3 millions now). There were never any mathematical schools there, and I would be very surprised if there is one now. Nobody ever cared. My mother tried hard to find something like a mathematical circle for me, but with no success. Eventually, I found a good teacher, who was the (seemingly only) organizer of math olympiads, but he did not run a circle (saying me that there is no interest in mathematics in the school where he worked). In 1959 I got into the Kuibyshev region team for the first all-Russian math olympiad (it was kind of unofficial one, in 1960 there was already official “1-st All-Union Math Olympiad,” where I was present too). In 1959 I was after 8th grade, came to Moscow for the first time, and was overwhelmed first by Moscow itself and second by the incredibly good mathematical circle in Moscow State University, which I visited. The participants were so good, that I felt that I am hopelessly behind them in math and will never be able to come even close to them. This impression strengthened next year, though my mother tried to calm me down saying, that even though I will not qualify

to be a student in Moscow, I am good enough for Kuibyshev Polytechnic Institute (where she worked), and this will be even better for me. Happily I did not go to the Kuibyshev polytechnic, because in 1961 (when I graduated from high school at age 16), MSU moved entrance exams to July (from August), so I could safely try Moscow State without any risk. I made it (with all 5's in two mathematics exams, physics, foreign language and composition). Surprisingly, I caught up with those math circle participants in 1-2 years, and during 3rd year left almost all of them far behind.

Now I wonder: were these mathematical circles really important?

Anyway, my doubts about omnipresence of math circles are based not on my Kuibyshev memories only. I was always interested in them and went to different places (while being a student in MSU) to help organize local olimpiads. I can say that at least in those days a mathematical circle in province was a rare exception, and by no means a rule.

★ ★ ★ ★

I have a second thought, though. I realized there is a reason why our data may have disagreed: yours refer to a later period.

When I was at school, and even when I was a MSU student eager to travel to provinces to help with math olympiads, the math schools were not there still. At that time probably, they were just in the making. Even in Moscow the famous schools number 2, 7, 57, as well as the Kolmogorov's internat, started later. (Maybe, Sputnik and the USA initiative in improving math education helped?) But I did not follow this development in the late 1960's. Obviously the picture you outlined in your Intro is time-dependent. We just sliced it at disjoint time intervals.

E. Shuryak (April 5, 2005):

- Misha privet,

We all know science/math was allowed by Stalin to be exceptional, as he knew the country needed specialists at least then, and for a while.

After reading your text I spoke with some people from Novosibirsk, as well as a Moscow mathematician. They told that the effort aimed at “killing” Jewish applicants was well coordinated, and started simultaneously in various places. In the first year non-acceptance of Jews was invariably explained as some unlucky coincidence: e.g. “a secretary had forgotten to include his/her name in the list for a committee, and since the list was already approved by the Rector, it cannot be changed.”

The fact that a campaign started in all best universities at the same time, as well as the frightening account of a truck at night accidentally chasing a lonely woman (in your book), tells me that it was all coordinated by KGB. They knew what they were doing, and now they have finally succeeded: there is nothing of any quality left there. A picture that hundreds of math professors suddenly becoming active anti-Semites all over the country, out of their own convictions, is way too naive. In fact it needs an explanation.

The question is whether it is timely now to try to find out who actually did it? At what level it was decided? Note that exactly the same thing happened at Novosibirsk Univ., and probably many other places far from Moscow. So, it must have been a high enough level... Since many of these people are still in power, I am not so sure you really want to deal with them, or will be able to find out “who killed the Science/Math Movement”...

One thing is clear: Russia did not need all these smart Jewish fellows: so be it. To whom we want to prove the opposite?

Muscovite (April 25, 2005):

- Да пошли они все на [х...] . От одного вида этих “патриотов” меня тошнит. Как сказал один известный московский острослов вчера у меня на вечеринке,

“... Жизнь дается человеку один раз, и прожить её надо таМ, чтобы не было мучительно больно за бесцельно проПитые годы...”

Michael Entov (May 3, 2005):

In connection with the recent developments we are trying to organize a conference “Different approaches to complexity in mathematics and mathematical physics” at Technion – Israel Institute of Technology (Haifa, Israel), in memory of Bella Subbotovskaya.

The conference is to take place some time between December 2006 and June 2007 — the exact dates are to be determined later. Would you be interested in coming to Technion for the conference?

Alexander Shen (May 5, 2005):

There is one thing which I feel I should mention — in your Preface it is written that prominent mathematicians Vinogradov, Pontryagin and Shafarevich were ferociously antisemitic and had a lot of administrative powers. As to antisemitism, it seems to be an oversimplification of a very complex situation (e.g., Pontryagin helped Rochlin a lot, protecting him in very difficult times; Shafarevich’s writings in “Из под глыб” are, in my opinion, very interesting and deep and do not deserve this label, etc.). As to administrative powers, this is true with regards to Vinogradov and Pontryagin, but completely false for Shafarevich: he was expelled from the Moscow State University as a dissident just before the discrimination of Jews started! I think it is not fair to combine all of them in such a general statement...

Alex Kogan (May 27 & 28, 2005):

- Dear Misha,

Many thanks for your effort. It did bring back some bad old memories (I am one of those few Jews who did succeed in getting into Phystech in 1978). But it is critical to document what had happened. By the way, Phystech was much more mechanical and efficient than Mekh-mat in separating out and failing the Jewish applicants. I also believe that names should be mentioned — not for the sake of retaliation, but for the sake of future generations. This is the only way to let possible future perpetrators know that the truth does eventually come out.

I am Professor of Information Systems in the Rutgers University Business School — see kogan.rutgers.edu. I know Ilya Muchnik pretty well.

I think not only me but a lot of people of my generation (and our parents!) will be very grateful to you for this work. There is of course another part of the story which is more difficult to argue — the admission to the doctoral courses (aspirantura): after I graduated from Phystech with straight 5's, our party committee had the chutzpa to stop me from applying to the Phystech aspirantura. I did survive, though, and got admitted in the aspirantura of the Computer Center of the USSR Academy.

By the way, you thank Misha Vyalyi in your preface. He was my room-mate for seven(!) years. He is not Jewish, but as a really-really decent guy he was absolutely disgusted by what was happening with me and the others (we got to know each other first in the 9-th grade, and became friends and team-mates at the Ukrainian and All-Union Mathematics Olympiads.

Very best, Sasha

Ilan Vardi (May 11 & 12, 2005):

• Dear Misha,

Hi, I just got your mail with the responses from Russian mathematicians. I must say that it surprised me a little, but in the end, I found it completely consistent with the conclusions I came up with, the ones published in the book. In particular, not one single person mentioned anything about the mathematical content (at least in English) not even the fact that the “Intellectual Genocide” paper mostly makes wrong mathematical assertions (no wonder they went unnoticed for 24 years). As I said, this is consistent with the phenomenon of mathematicians losing their sense of correctness when dealing with political issues, and the general loss of any mathematical awareness on all sides when it comes to these killer problems. In particular, I cite Mark Sapir (whom I know to be interested in elementary math puzzles): “The only really interesting parts of the book are about the alternative university because these pages are positive and ‘timeless’ things.” Apparently, he didn’t feel that any of the mathematical results were ‘timeless’ indicating that the only thing you can expect from parties involved is total mathematical blindness. I also see that my original frustration with Shen, that is, his inability to make a precise statement of fact, is completely typical behaviour. In any case, this definitely confirms me as the only possible person to actually do the work I did. I now find myself quite surprised (pleasantly so) that you were actually interested in my efforts to find the mathematical truth behind the problems, including my critique of “Intellectual Genocide.”

Maybe there will be a different reaction from non Russians.

Best regards,
Ilan

★ ★ ★ ★ ★

In my opinion, the number of mathematicians in the world is constant, that is, a very small number, and the majority are just smart people who got into this career because it is possible these days (a hundred years ago, they would have been craftsmen). One good test is whether you can keep your focus despite adversity. I should know, I have been in as hard a situation as the folks still in Russia. As Sapir points out, the ones now in the US are living very comfortably.

Из частной беседы с Вадимом Кузминым
и его подружкой,
дочерью авиаконструктора Миля,
в кафетерии ИСТР, в Триесте,
May 27, 2005:

Ничего этого не было. Если и была дискриминация, то самую малость. Так, по мелочам.

... Сами виноваты, надо было записываться русскими.

Marek Karliner (April 28, 2005):

- Dear Misha,

Have you seen this document? Doesn't it complement nicely your book? It is tragicomical to see how such issues were decided in the Soviet Union.

ДОКУМЕНТ 45

Сов.секретно
Экз.единственный
Рабочая запись

ЗАСЕДАНИЕ ПОЛИТБЮРО ЦК КПСС

20 марта 1973 года

К вопросу о выезде за границу лиц еврейской национальности

БРЕЖНЕВ. Когда читаешь материалы, а я их читаю все, то видишь, что все-таки создан серьезный тормоз в ходе завершения официального визита в США по причине сионизма. В последние месяцы разгорелась истерия вокруг так называемого образовательного налога на лиц, выезжающих за границу. Я много думал как быть. На прошлом заседании Политбюро мы не записывали этого, но условились, что т.Андропов примет соответствующие меры. Я тогда не знал, что это дело т.Щелокова, и отдел у них, оказывается, такой есть. Я сказал тогда - приостановить взимание налогов, то есть, не отменяя закона, отпустив партию человек в 500 евреев, которые никакого отношения ни к секретности работы, ни к партийным учреждениям не имеют. Даже, если попадутся и лица среднего возраста, например, из Биробиджана, отпустить. Они расскажут и все будут знать об этом. Но стал я проверять, душа моя беспокойная, думаю, дай спрошу т.Щелокова. Звоню ему, а он говорит я в первый раз слышу. Как первый раз слышишь? Значит, он ничего не знает об этом. Он не виноват, он не был на Политбюро. Звоню Юрию Владимировичу¹: как же так? Юрий Владимирович говорит: я разговаривал с его замом. Значит, заместитель не передал ему. Звоню т.Громыко, прошу проверить по консульствам. Говорю ему, что не знаю, что консульства оформляют выезды. Оказывается, ничего подобного. До сих пор взимают плату. В 1973 году отправлено 349 человек, с которых взыскано полтора миллиона рублей. У меня справка есть об этом.

АНДРОПОВ. Это до Вашего указания.

БРЕЖНЕВ. Мы об этом говорим уже с прошлого года. Указания не выполняются. Меня это беспокоит. Я не ставлю вопроса об отмене закона, а если хотите, и этот вопрос можно бы поставить. То ли мы будем зарабатывать деньги на этом деле, то ли проводить намеченную политику в отношении США. Учитывая конституционные статьи, Джексон успел внести поправку еще до внесения Никсоном законопроекта о предоставлении нам режима наибольшего благоприятствования². Эту поправку внес сенатор, и конгресс уже не может отказать в обсуждении

этой поправки. Джексон уже опередил. Вот я и думаю: что тогда стоит наша работа, что стоят наши усилия, если так оборачивается дело. Ничего!

АНДРОПОВ. Разрешите. За последнее Ваше указание, которое было дано на прошлом Политбюро, я несу ответственность. По моей вине мы задержали на шесть дней (просто это неповоротливость нашего аппарата) исполнение вашего указания. В субботу вы мне позвонили, в субботу мы связались с т.Щелоковым.

БРЕЖНЕВ. Никто, Юрий Владимирович, не давал вам права писать письмо. Но если какой-то юрист или консульство не выполняет своей миссии, так замените его. Мы дали т.Добрынину резервную позицию, он держит ее в кармане, пока из Москвы не получит согласия. Перед отъездом т.Добрынина мы с т.Гречко беседовали с ними и инструктировали по этапам. Какие возможные варианты указаний будет он получать по мере согласования вопросов на Политбюро. Шел разговор и о том, как выпустить из кармана еврейский вопрос. Мы проявляем заботу, а что из этого получается? Ничего.

АНДРОПОВ. На пять дней, повторяю, мы задержали.

БРЕЖНЕВ. В субботу, в воскресенье я на воздух не выходил, а еще приходится заниматься этим вопросом.

АНДРОПОВ. Леонид Ильич, в субботу Вы позвонили, в субботу пошло указание по этому вопросу, фактически с субботы действует, и сегодня «Свободная Европа» и Би-би-си объявили, что евреи отъезжают без взимания налога...

Но я хочу все-таки привести такую справку относительно этих 300 человек. Было Ваше указание в ноябре и декабре: выпустить, и мы выпустили без взимания налога 600 человек и еще раз 600 человек. А потом - закон действует и мы действуем. Я должен сказать, что 75 процентов уезжающих вообще ничего не платят, и только 13 процентов составляют люди, которые платят. Начиная с понедельника не взимаем платы.

БРЕЖНЕВ. Юрий Владимирович, извините, вот справка. Я ее читаю: в 1972 году из 29 тысяч 816 человек лиц еврейской национальности, выехавших из СССР, 912 человек, имеющих высшее образование, в соответствии с Указом Президиума Верховного Совета СССР, возместили затраты в сумме 4 миллиона 427 тысяч рублей. Это за 1972 год.

За два месяца 1973 года выехало 3318 человек, из них 393 человека, имеющих образование, заплатили 1 миллион 561 тысячу 375 рублей. Вот что стоят наши общие разговоры. Поэтому сионисты воют, Джексон на это опирается, а Киссинджер приходит к Добрынину и говорит, что мы понимаем, что это внутреннее дело, мы не можем вмешиваться, у нас тоже законы есть. В то же время он говорит: помогите как-нибудь, Никсон не может пробить законопроект, он работает среди сенаторов. Зачем нам нужен этот миллион.

АНДРОПОВ. Я получил это указание через т.Суслова в ноябре, было сказано, что это в разовом порядке. В разовом порядке мы это и сделали, Леонид Ильич. Затем закон вступил в силу. Я еще раз говорю, 10 - 11 процентов от числа отъезжающих платят.

Леонид Ильич, я хочу попросить Вас взвесить и другой вопрос. Вот сидит т.Громыко, он знает: англичане в свое время внесли в ЮНЕСКО предложение о предотвращении утечки мозгов. Мы сейчас выпускаем и стариков, и детей, и взрослых. Едут врачи, инженеры и т.д. Начинают и от академиков поступать заявления. Я Вам представил список.

БРЕЖНЕВ. Юрий Владимирович и Николай Анисимович³, никаких академиков, а из этих 39 тысяч заявок вы отберете 500 человек и отправьте их.

КОСЫГИН. Если едут у вас академики, я не слышал, чтобы какие-то академики уезжали. Оттого, что он заплатил 500 рублей, что он, не академик стал, что ли?

БРЕЖНЕВ. Закон не надо отменять. Мы условились не менять закона. Но на данном этапе, когда сионисты разожгли кампанию вокруг поправки Джексона и вокруг Законопроекта о предоставлении нам режима, надо отпускать. Дело не в режиме, им надо вообще поссорить Советский Союз с Америкой. Есть группа республиканцев, которая поставила целью сорвать улучшения отношений Советского Союза с США. Никсон - за, администрация - за, а многие сенаторы против только из-за того, что у нас с евреями взимают плату.

КОСЫГИН. А кого мы не хотим выпускать, мы не должны выпускать.

АНДРОПОВ. Вот недавно поступил на имя Леонида Ильича документ.

БРЕЖНЕВ. Я прочел твою записку т.Марше.⁴ Я с тобой согласен.

АНДРОПОВ. С понедельника едут не 600 человек, а полторы тысячи.

БРЕЖНЕВ. Отпусти 500 второстепенных лиц, а не академиков. Пусть они говорят, что с них ничего не взяли. Возьмите пару инженеров с высшим образованием, не имеющих никакого отношения к секретам, например из пищевой промышленности, - пусть едут. Но не с оборонной промышленности. Пускай и инженеры едут бесплатно. Это временный тактический маневр.

ЩЕЛОКОВ. Леонид Ильич, так мы поступаем с понедельника, отобрали людей с высшим образованием, которых можно отпустить...

Леонид Ильич, я еще хотел сказать, что, может быть, в связи с тем, что опубликованы данные о желающих возвратиться, использовать их здесь для пропаганды по телевидению, в печати и т.д.

АНДРОПОВ. Было такое поручение, вчера мы получили телеграмму, 10 семей мы возвращаем.

КОСЫГИН. Наш народ очень плохо реагирует на возвращение. Говорят, раз уехали, то их обратно не принимать.

БРЕЖНЕВ. Найти другие средства информации, не показывать людям, это вызывает негативную реакцию. Можно сообщить доверительно Никсону, что бегут из Израиля. На границу можно вещать. Ни у кого сомнений нет, товарищи?..

Я задал себе вопрос: существует издавна у нас еврейский журнал, который издается в Москве.

КОСЫГИН. На русском языке?

БРЕЖНЕВ. Нет, на еврейском. Редактор еврей Арон Вергелис, язык еврейский. Я узнал это из информации, что этот редактор ездил в Америку, он честно написал, как его обрабатывали, как его повез на дачу один его старый друг. А когда приехал, увидел там шабаш еврейский. Ах, Арон приехал. А этот Арон взял и выдал все в нашу пользу и написал записку. Я впервые узнал, что есть такой журнал.

Я тогда задал вопрос: есть у нас сколько-то цыган, но разве больше, чем евреев? Или у нас есть закон, преследующий евреев? А почему не дать им маленький театрик на 500 мест, эстрадный еврейский, который работает под нашей цензурой, и репертуар под нашим надзором. Пусть тетя Соня поет там еврейские свадебные песни. Я не предлагаю этого, я просто говорю. А что если открыть школу? Наши дети даже в Англии учатся. Сын Мжаванадзе воспитывается в Англии. Моя внучка окончила так называемую английскую школу. Язык как язык, а остальное все по общей программе. Я так рассуждаю: открыли в Москве одну школу,

называется еврейская. Программа вся та же, как и в других школах. Но в ней национальный язык, еврейский, преподается. Что от этого изменится? А ведь их все-таки три с половиной миллиона, в то время как цыган, может быть, 150 тысяч.

Я эту дерзкую мысль задал сам себе. Но так как я всегда полон откровения, то я думаю - никто ни разу не предложил, а что если разрешить еврейскую еженедельную газету? У нас раз в неделю маленькие газеты выходят в Биробиджане. Не все ее прочтут на еврейском. Прочтет еврей, старый Абрамович прочтет, а там-то, что ТАСС передает.

У нас вся политика по еврейскому вопросу основывается на одном Дымшице, вот видите, у нас т. Дымшиц зам. пред. Совмина, так что зря говорите, что евреев притесняем. А может быть, нам немножко мозгами пошевелить?

Я это говорю свободно потому, что я еще не поднял руки за то, что говорю. Я просто пока - руки по швам и рассуждаю, вот в чем дело.

КОСЫГИН. Конечно, надо подумать, потому что мы сами себе придумываем еврейский вопрос.

БРЕЖНЕВ. Сионизм нас глупит, а мы деньги берем со старухи, которая получила образование. Раз у нее высшее образование - плати деньги Щелокову. Он тебе даст бумажку, тогда ты поедешь в Израиль. Вот такова политика. Я, конечно, не забываю при этом, что отпускать не только академиков, но и специалистов среднего звена не следует, не хочу ссориться с арабами. Мы просим вас в этом месяце отпустить одну партию - 100 чел., затем вторую - 100 чел., третью - 100 чел. и не брать с них налогов, включить несколько второстепенных специалистов - вот о чем идет речь.

Вы извините, что я так темпераментно говорю. Но я говорю потому, что Политбюро было такого мнения, а практических решений нет.

Товарищи принимают это в принципе?

ВСЕ: правильно.

БРЕЖНЕВ. У нас не один ум, а 25 умов⁵. А там один придумал и решил. Как поступают капиталисты? Если ты поступаешь в колледж, получаешь образование за пять лет или за четыре, оно стоит 40 тысяч долларов. Раз ты получаешь высшее образование, то обязан эти 40 тысяч долларов вернуть. После этого ты имеешь право свободной поездки в любую страну мира. Таково положение в Израиле. У нас сейчас поступают так: если гражданин кончил, например, пищевой институт, проработал 40 лет, а ему уже 60 лет. И вдруг вспомнили, что он 40 лет назад кончил институт, теперь же он в Израиль хочет ехать. Ему говорят: плати 5800 рублей, тогда поедешь. Но ведь это совсем разные вещи. Так что одно дело дать стипендию человеку, и он должен ее отработать, а другое - плата за полученное образование.

КОСЫГИН. Давайте примем предложения.

БРЕЖНЕВ. Не надо давать письменных указаний, надо вызвать работников и сказать им. Причем это не каждый может понять, могут разболтать, что это тактические шаги. Хорошо, кончили с этим. Скажу об одном случае. Как-то приехал ко мне Антон Гаевой в Днепропетровск.⁶ Было воскресенье. Я говорю: знаешь что, Антон, давай сходим куда-нибудь. В это время открывалась филармония, как раз 200 метров от нашего дома. Я говорю ему - в филармонию какая-то певица Соня приехала. Я даже не понял, что фамилия у нее еврейская. На концерте оказалось 100 процентов евреев. Только Антон Гаевой и я с супругами оказались среди них. А эта Соня пела еврейские старинные и свадебные песни. Только песенку споет, а зал кричит: браво, Соня! Если открыть

еврейский театр, то он будет бездотационный и будет приносить прибыль в бюджет.

КОСЫГИН. Тогда я запишу в доход.

БРЕЖНЕВ. Ты можешь запланировать миллион, они тебе дадут миллион, хотя они его и не заработают.⁷

1. Имеется в виду Ю.В. Андропов.

2. Имеется в виду поправка Джексона-Вэника к Закону о реформе торговли ("Trade Reform Act") 1974 года, принятая Конгрессом США, согласно которой запрещалось предоставление Советскому Союзу и странам Восточной Европы (за исключением Польши и Югославии) статуса наибольшего благоприятствования в торговле, государственных кредитов, а также государственных гарантий на кредиты и частные инвестиции. - См.: U.S., Congress, Senate, Senator Henry M. Jackson of Washington Speaking for the Amendment of the Trade Reform Act of 1974, Amendment No. 2000, 93d Cong. 2d Sess., December 13, 1974, Congressional Record 120:174.

3. Имеется в виду Н.А. Щелоков. Он не был членом Политбюро, но существовала практика приглашения министров на Политбюро для участия в обсуждении вопросов, касавшихся их ведомств.

4. Речь идет о письме Генерального секретаря французской компартии Ж. Марше, в котором он говорил об отрицательном политическом резонансе политики КПСС по вопросу о выезде евреев из СССР.

5. Видимо, имеется в виду приблизительное количество членов Политбюро (включая кандидатов и секретарей ЦК). Во время заседания 20.3.1973 Политбюро вместе с Секретариатом ЦК составляло 26 человек.

6. Л.И. Брежнев был первым секретарем Днепропетровского обкома в период с 1946 по 1950 годы.

7. Текст документа печатается по публикации в журнале «Новое время», 1996, № 9, стр. 42-44.

Marek Karliner (May 2, 2005):

- *Dear Misha,*

This document is very unlikely to be a forgery. It comes from a collection of high-level Soviet documents “Еврейская эмиграция в свете новых документов” published in 1998 by a reputable researcher working at the Sovietology Center of the Tel Aviv University, namely Dr. Boris Morozov. For more details about the author see

<http://www.tau.ac.il/~russia/cvs/Research%20fellows/morozov.html>

The author had an officially-sanctioned access to top-level post-Soviet archive called ЦЕНТР ХРАНЕНИЯ СОВРЕМЕННОЙ ДОКУМЕНТАЦИИ. The book is a part of a wider AGNMON PROJECT dealing with Jewish emigration from the USSR after the WWII, see

<http://www.tau.ac.il/~russia/projects/agmonprj.html>

The scientific committee of this project consists of four very senior and very well-known Israeli historians. This book contains 75 documents dated between 1957 and 1989.

To double-check, I asked the editor. His answer is below.

Dear Dr. Morozov,

A footnote says that the text of this document is based on publication in Novoye Vremya. This is different from most documents in the book, where you had access to the official protocols.

Has it been possible to verify that the text published by Novoe Vremia is accurate ?

Thanks and Best Regards,

Marek Karliner

Dear Dr. Karliner,

Yes, the text is 100 % OK. It is referenced to *Novoye Vremya* because it is from the President's archive and is not declassified, so I had to use them in order to publish it.

Yours,

Boris Morozov.

Dear Mr. Shifman

We are sorry for the substantial delay in answering your letter.

Mainly, it has been caused by the loss (due to force-majeure circumstances) of our magazine's archives.

After having studied the article authored by a well-known historian Mr. L. Bezymenski, that has drawn your kind attention ("NT" No.9/1996), we are pleased to inform you that the Editorial Board has no doubts whatsoever about the authenticity of the documents mentioned in the article in question.

We apologise once again for the delay in answering you.

With kind regards,

Yours sincerely

Youri Schwartz

June 9, 2005

Yuri Dreizin (June 20, 2005):

• Dear Misha,

I should thank you for the book on "intellectual genocide" you gave me. I knew Valery Senderov and Boris Kanevsky very well since the time we were active members of an unofficial freshmen seminar on nontrivial problems in elementary mathematics led by Anatoly Pavlovich Savin. I believe Savin was in charge of selecting math problems for the All-Union Math Olympiads organized by Fyztech. I lost

close contact with Valery and Boris later: in the 1970s I was already with the Kurchatov Institute closely monitored by KGB, and, understandably, did not want to be associated with dissidents.

Much later (around 1986), I got involved in a story of the type described in your book. I thought I could try defend, without too much risk for myself, a mathematically talented Jewish girl from Novosibirsk (her name was Anya, she was the daughter of Grigory Surdutovich) who was flunked at the entrance examination at Mekhmat.

I gave her a few brush-up lessons before the examinations, and when she told me how she was deliberately flunked, I believed her completely. I went on her behalf to Sadovnichii, then Prorector of the Moscow University and the Head of the Admission Committee. I had a short (less than 10 min) conversation with him. I tried to expose the unfairness of the exam, and saw, with my own eyes and very clearly that, while he wanted to be perceived as neutral and objective, he understood damn well what was going on. Sadovnichii just covered it up the best way he could.

By the way, that girl, Anya, the daughter of Grigory Surdutovich whom you met in my house, later was admitted to “kerosinka.” But the injustice done to her at Moscow University broke her life, literally. She never recovered.

Your book revived memories of this nearly forgotten chapter of my life, and brought it to a closure.

D.I.K. (August 15, 2005):

- A miracle happened, I got “5” on written math. On oral they gave me about 10 problems, in a quick succession, which I dealt with more or less OK. I do not remember them now, only the last one, which, they said, was trivial:

$$f(f(x)) = x^2 - 2.$$

I could not solve this equation, although I managed to prove that a solution existed. This was the end of my Mekhmat story, as I got “2,” and later decided not to waste my time next year. Somebody told me recently that Feynman used to suggest this functional equation to his prospective postdocs to try their skills. I do not know whether or not this is true.

August 21, 2005

• *Hello, Misha, here is a message I just received. I thought you might be interested in the new historical information Vadim Suvorov has about other MGU departments.*

Best regards,

Ilan Vardi

Vadim Suvorov [stelary@gmail.com] (August 20):

Dear Mr. Vardi,

Being myself in the past one of potential targets (although not a victim) of “political math,” I was surprised by and enjoyed reading your article on killer problems (“Mekh-mat entrance examination problems”). I would like to offer my solutions to some of the problems.

Problem # 6

$$\begin{aligned}
 (1/\sin^2 x) &\leq (1/x^2) + 1 - 4/\pi^2 \text{ for } 0 < x < \pi/2 \leftrightarrow \\
 (1/\sin^2 x) - 1 &\leq (1/x^2) - 4/\pi^2 \leftrightarrow \\
 (\cos x / \sin x)^2 &\leq (1/x^2) - 4/\pi^2 \leftrightarrow \\
 (x \cos x / \sin x)^2 &\leq 1 - 4x^2/\pi^2.
 \end{aligned} \tag{1}$$

Thus, the first line is equivalent to the last. The proof of the last line splits in two parts. We will prove both sides of the inequality

$$(x \cos x / \sin x)^2 \leq \cos x \leq 1 - 4x^2/\pi^2 \quad (2)$$

separately. I will start from the second inequality,

$$\begin{aligned} \cos x &\leq 1 - 4x^2/\pi^2 \leftrightarrow \\ 4x^2/\pi^2 &\leq 1 - \cos x \leftrightarrow \\ 4x^2/\pi^2 &\leq 2[\sin(x/2)]^2 \leftrightarrow \\ 2x/\pi &\leq \sqrt{2} \sin(x/2). \end{aligned} \quad (3)$$

The last line is a valid inequality because $2x/\pi$ is a chord connecting the endpoints of the convex function $\sqrt{2} \sin(x/2)$ for $x = 0$ and $\pi/2$.

Now, I comment on the first inequality in Eq. (2),

$$\begin{aligned} (x \cos x / \sin x)^2 &\leq \cos x \leftrightarrow \\ (x \cos x / \sin x) \frac{x}{\tan x} &\leq \cos x \leftrightarrow \\ x / \sin x &\leq (\tan x) / x. \end{aligned} \quad (4)$$

Generally speaking, this is a well-known fact. Its proof would be required, however, during an exam like you described. Therefore,

$$\begin{aligned} x / \sin x &\leq \tan x / x \leftrightarrow \\ x^2 \cos x &\leq \sin^2 x \leftrightarrow \\ x \cos^{1/2} x &\leq \sin x. \end{aligned} \quad (5)$$

Let us consider $f(x) = \sin x - x \cos^{1/2} x$ on the interval $0 \leq x < \pi/2$. Then, $f(0) = f'(0) = f''(0) = 0$, and

$$f''(x) = \sin x (\cos^{-1/2} x - 1) + x(1 + \cos^2 x) / (4 \cos^{3/2} x),$$

which is obviously positive on the above interval. Therefore, $f'(x)$ grows from 0 and is also positive, and, consequently, $f(x)$ is positive, which completes the proof.

Problem # 12

$$\begin{aligned} y(x+y)^2 &= 9, \\ y(x^3 - y^3) &= 7. \end{aligned} \tag{6}$$

From the first equation we have $y > 0$, then from second $x > 0$. Let $z = \sqrt{y}$. Then,

$$\begin{aligned} y(x+y)^2 &= 9 \leftrightarrow \\ z(z^2+x) &= 3 \leftrightarrow \\ x &= 3/z - z^2. \end{aligned} \tag{7}$$

Substituting x and y in the second equation we have

$$\begin{aligned} z^2((3/z - z^2)^3 - z^6) &= 7 \leftrightarrow \\ z^9 - (3 - z^3)^3 + 7z &= 0. \end{aligned} \tag{8}$$

Let us consider

$$f(z) = z^9 - (\lambda - z^3)^3 + 7z = 2z^9 - 3\lambda z^6 + 3\lambda^2 z^3 + 7z - \lambda^3$$

for $\lambda > 0$. Then

$$\begin{aligned} f'(0) &= 18z^8 - 18\lambda z^5 + 9\lambda^2 z^2 + 7, \\ f''(z) &= 144z^7 - 90\lambda z^4 + 18\lambda^2 z = 18z(8z^6 - 5\lambda z^3 + \lambda^2). \end{aligned} \tag{9}$$

The discriminant of the expression in the parentheses is negative, and, therefore, $f''(z) > 0$ for all $z > 0$. Next,

$$\begin{aligned} f'(0) &> 0, \quad f''(z) > 0, \quad \text{therefore,} \quad f'(z) > 0 \quad \text{for all } z > 0; \\ f(0) &< 0, \quad f(+\infty) > 0, \quad f'(z) > 0, \end{aligned} \tag{10}$$

therefore, there exist the only solution for z such that $f(z) = 0$. For $\lambda = 3$ we can guess $z = 1$. Hence,

$$z = 1 \rightarrow y = 1, \quad x = 2$$

is the only solution.

Problem # 8

$$\begin{aligned} (a-d)^2 + (b-c)^2 &\geq 1.6 \\ \text{for } a^2 + 4b^2 &= 4, \quad cd = 4. \end{aligned} \tag{11}$$

I was looking for a curve separating the hyperbola and the ellipse. Only after considering ellipse, hyperbola, and various exotic (and computationally difficult) curves I realized that a line will do. Indeed, let us consider a tangent to the ellipse at the point (a, b) . Its equation is

$$x + 4by - 4 = 0.$$

For arbitrary (x, y) the signed distance to the tangent

$$\text{dist}(x, y) = (ax + 4by - 4) / \sqrt{(a^2 + 16b^2)}.$$

Therefore, for the hyperbola points

$$\text{dist}(d, c) = (ad + 4bc - 4) / \sqrt{(a^2 + 16b^2)} \geq (2\sqrt{(4adbc)} - 4) / \sqrt{(a^2 + 16b^2)}$$

(Cauchy's inequality). Then,

$$\text{dist}(d, c) \geq (2\sqrt{(4abcd)} - 4) / \sqrt{(a^2 + 16b^2)} = (8\sqrt{(ab)} - 4) / \sqrt{(a^2 + 16b^2)}.$$

For all point of the ellipse the $\text{dist}(a, b) \leq 0$ (because the line is the tangent of a convex function). Therefore, the distance between the ellipse and the hyperbola

$$\text{dist} \geq (8\sqrt{(ab)} - 4) / \sqrt{(a^2 + 16b^2)}.$$

Selecting $a = \sqrt{2}$, and $b = 1/\sqrt{2}$, we have $\text{dist} \geq 4/\sqrt{10}$, and, therefore, $\text{dist}^2 \geq 8/5$, q.e.d.

(Why this particular point? I guess, because it corresponds to $\pi/4$ in polar coordinates. It also helps to write the result as a decimal fraction, to trick the problem-solver into thinking that it is not exact.)

Another interesting result can be obtained using $a = 8/5$, and $b = 3/5$ (from $4^2 + 3^2 = 5^2$). Then

$$\text{dist}^2 \geq (121 - 40\sqrt{6})/13 \approx 1.7708,$$

which is a very close approximation to the exact minimum. During the exam, however, one would have to prove that $(121 - 40\sqrt{6})/13 \geq 8/5$. Calculator would not be accepted as a proof. (Not difficult, but annoying anyway.)

Another problem. The following problem was attributed by folklore to a similar exam at the time of my graduation (1980). Unfortunately time wiped out even those details I knew about it. What remains is the problem itself, and the answer (negative): Is there a point inside the unit square (a square with the side length 1) for which the distances to all four vertices are rational numbers?

An interesting observation is that tricks were expected in these problems. It never helped, but formally one could request during appeal (after failed exam) to demonstrate a solution which does not go beyond school graduate knowledge. So, such a solution was always prepared by problems' authors. Nobody asked, however, how long did it take them to come up with the solution.

The configuration problem in geometry (when the condition were setup so there were only specific combination of figures, or there were no solution at all) were considered a fair game. As an example, another department of Moscow University, namely VMK (Vychislitel'noy Matematiki i Kibernetiki, Computational Mathematics and Cybernetics) always included one of them into their written exam (which everybody had to pass). The dirty trick here was that for the same result (3 problems out of 5) a "clean" student would get the highest grade (5), while undesirables would get "barely passed" (3), at best. Still, the request to calculate the derivative of $\log(\log(\sin x))$ were a part of folklore, education, and mathematical culture (at least, in the best schools).

Vadim Suворov (August 22, 2005):

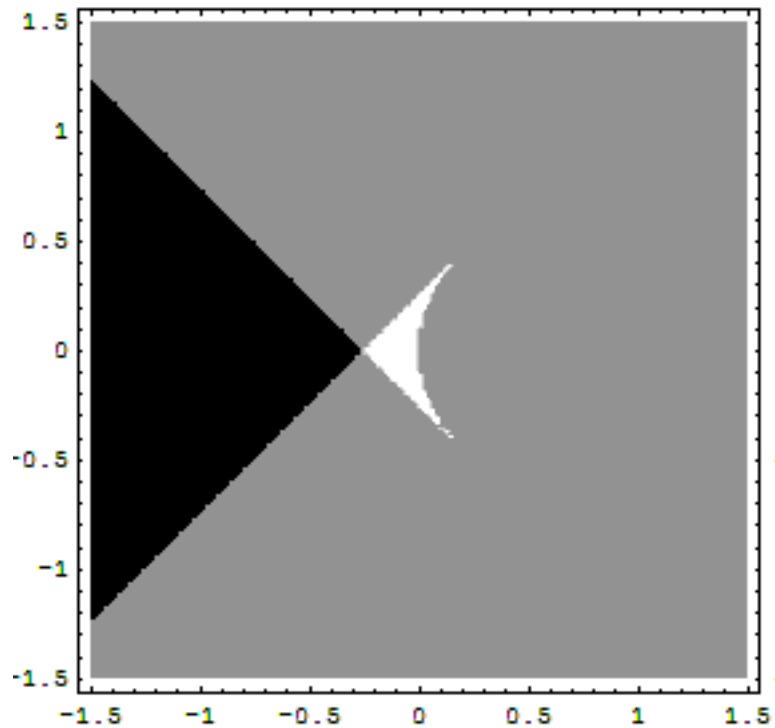
- Misha,

I looked a little more into Kanevsky and Senderov's essay, and my attention was attracted by Igor Averbakh's problems on p. 116 and Ilan's Vardi comment on these problems in his "Remarks" on p. 134.

1. Apparently, Ilan misunderstood the problem. Ilan Vardi interpreted the problem as finding solutions (A, B) in integers while it seems that this was not required. For each pair (A, B) the equation has some particular and distinct number of solutions (assuming x is real). Therefore, we can define

$$M_n = \{(A, B) : \text{equation has exactly } n \text{ solutions}\}.$$

Obviously, M_n is empty for $n > 4$. I attach the file with an illustration. The white segment is M_4 , the black M_0 , the gray M_2 . M_1 and M_3 are on the boundaries of the distinctly colored domains. The solution is rather technical and boring. No bright ideas, just pure calculation. On this graph, the horizontal axis is A while the vertical axis is B .



2. Igor's second problem makes me think there is a typo somewhere; or is it intentionally constructed to have no roots? Do you think it is possible to check?

Vadim Suvorov (August 24, 2005):

- I got an impression that you might feel that my comments exonerate anti-Semitic practitioners. This is not so. I am just separating apples from oranges. I did have my share of anti-Semitic experiences first-hand. I do feel the practice was revolting. Anti-Semites used each and every rule in the book to harm children, but they did not necessary invented the book. The exams were biased. Matmekh LGU admitted just a single Jew (by passport) in 1980. I do know Hamburg score for many of my classmates vs. those admitted. Their

lives were broken. Not necessary during the math exam — LGU preferred composition. I admire A.M. Vershik very much, for that he was able to put math above political sins of the past. I do regret I did not know him better in my university years. He is an amazing person. I guess he is right to a degree: to ignore but not forget. Want to do math — fine. Shake hands — no.

Stanislav Lipovetsky (October, 2005):

- Dear Misha,

This book of yours is a really a great and noble enterprise to preserve the memory of all young would-be scientists who suffered and perished from Soviet anti-Semitism. What happened was, indeed, an intellectual, mental, and psychological genocide, which was imposed on many, in addition to imprisonments and very probable murder of selected individuals. I myself periodically thought about such a book, so I am very grateful to you for actually performing this work!

In 1965 I was 200% ready for entrance examinations. I finally succeeded in getting admission to MGU, Dept. of Physics, but only “*Vechernee otdelenie*” (evening course). All Jews of MGU’s Dept. of Physics belonged to this evening course, I never met a single one Jewish regular student.

I graduated with degree in theoretical nuclear physics, and worked, for some time, at the Institute of Nuclear Physics of MGU. In about 1973 they began “*ethnic cleansing*” to ensure “*Juden-frei*” environment, and I was fired.

After that I couldn’t find any work in physics, and began to work as a “*mathematician in economics*”. Evidently, at that time they hoped to revive economy even with such remedy as Jews. Well, after all we can conclude that Sonya Vlas’evna helped us to leave that unhappy country sooner.

I had begun the process of leaving USSR in 1977, but could leave only in 1989. I immigrated to Israel where I lived

for about 6 years, working at the Dept. of Management, Tel Aviv University.

Then in 1995 I and my wife moved to USA, two years in NYC, and in 1997 we moved to Minneapolis, with a more normal social environment.

Alexander Soifer (March 26, 2006):

- I am very pleased that you put in an effort to continue a fine tradition of “It Seems I am a Jew.” Yet, I personally do not believe your book has come out as well as it could. The main problem for me is your choice of the “solo violinist” (Vardi) who does not understand, nor has made an effort to understand the subject matter. Attached please find my review.

- **YOU FAILED YOUR MATH TEST, COMRADE EINSTEIN: Adventures and Misadventures of Young Mathematicians**; edited by M. Shifman, World Scientific, 2005. *A Review by Alexander Soifer*

The publisher describes the book as follows:

“This groundbreaking work features two essays written by the renowned mathematician Ilan Vardi. The first essay presents a thorough analysis of contrived problems suggested to “undesirable” applicants to the Department of Mathematics of Moscow University. His second essay gives an in-depth discussion of solutions to the Year 2000 International Mathematical Olympiad, with emphasis on the comparison of the olympiad problems to those given at the Moscow University entrance examinations.

The second part of the book provides a historical background of a unique phenomenon in mathematics, which flourished in the 1970s80s in the USSR. Specially designed math problems were used not to test students ingenuity and creativity but, rather, as “killer problems,” to deny access to

higher education to “undesirable” applicants. The focus of this part is the 1980 essay, “Intellectual Genocide,” written by B Kanevsky and V Senderov. It is being published for the first time. Also featured is the story of the so-called Jewish Peoples University, the inception of which is associated with Kanevsky, Senderov and Bella Subbotovskaya.”

Clearly, the centerpiece of this collection is the pair of Vardis articles, with “the second part” and the third part serving as an appendix. This approach reminds an expression about “the tail wagging the dog.” Surely, analysis of these admission problems present interest only as an illustration of the Soviet anti-Semitism. Thus, it would have been much more appropriate to make the second and third parts to be central, and use Vardis articles in appendix. (The choice of International Olympiad problems for comparison was poor – Moscow Mathematical Olympiad would have provided a better “measuring stick.”)

Mathematicians around the world ought to treat the articles of the second part as a required reading, for they will learn about a sad reality of their profession under tyranny from powerful sources: *Intellectual Genocide* by B. Kanevsky and V. Senderov; *Science and Totalitarianism and Admission to the Mathematics Departments in Russia in the 1970s and 1980s* – both by A. Vershik, and *Entrance Examination to the Mekh-Mat* by A Shen.

The third part of the book consists of four articles about the so-called Jewish Peoples University and its founder, Bella Subbotovskaya, who paid with her life for founding this unprecedented humane institution, that attempted to right the wrong of the late Soviet empire: *Free Education at the Highest Price* by K. Tylevich; *Jewish University* by D. Fuchs; *Remembering Bella Abramovna* by A. Zelevinsky; and *Bella Abramovna Subbotovskaya* I. Muchnik.

The most unfortunate feature of the book, is the selection of Dr. Vardi as the spokesman for all authors of the book.

Vardi admits: “I have never been to Russia and I don’t speak a word of Russian.” In spite of his lack of knowledge, he does not hesitate to be highly judgmental. He repeatedly assaults all people (other authors of this book certainly included) as incompetent mathematicians, because “over the last 24 years, it had never occurred to anyone reporting about the problems to even mention this supplementary solution (note that all these people were involved in that system in one way or another).” All these hot air accusations are grounded in Vardi’s ignorance of the Soviet educational program that did not include complex numbers, and thus neither students nor mathematicians did not seek solutions outside the reals. By the same token Vardi would label incompetent everyone from Pierre de Fermat to Andy Wiles for “overlooking” complex solutions of the Diophantine equation in the Last Fermat Theorem! Vardi goes further, and claims that these incompetent critics of the problems before him and Jewish students who failed these problems are also guilty parties, in addition to the Soviet anti-Semites: “The title Intellectual Genocide is quite appropriate, but I believe that it should be applied to all [Vardi’s emphasis] parties involved.”

Vardi proudly declares: “In subsequent years, my work on the Mekh-Mat Problems put me in the [sic] position of arbiter for such conflicts.” How did “the arbiter” rule? “On at least two occasions, I had to intervene on the behalf of Russian mathematicians whose visits to universities were in jeopardy due to their previous political activity. I am glad to say that my efforts were successful. I hope that this will convince anyone looking at this book that its purpose is not retaliation against former wrongs. On the contrary, the authors of this work have been instrumental in protecting the rights of the perpetrators of wrongs described in this work.”

No, Dr. Vardi – the victims of anti-Semitic persecution deserve help, not the perpetrators. At the very least, the

perpetrators of crimes merit the punishment by glasnost. Their names must be assembled and published, together with their deeds, so that respectable members of the worlds mathematical community do not shake their hands, and do not honor them with VIP visits – if we are to learn anything from the past.

Vardi alleges “the authors of Intellectual Genocide, admit that their evidence is anecdotal.” This is outright not true. I, for one, went through discriminatory entrance exams in 1966. I witnessed Yuri Merzliakov, Arkady Slinko, and Shestakov, publicly smearing the Latvian Jew Dr. Levich at the Soviet National Symposium in Tiraspol in 1974, with the current Vice-Rector of Moscow State University Alexander Vassilyevich Mikhalyov presiding over the ordeal. When I was ready to leave the Soviet paradise in 1978, I received a phone call from Prof. Gregory Soifer (no relationship), who told me do not be discouraged if the paper you recently submitted to *Mathematical Notes* will not be accepted. My colleague here at Tomsk University received your paper from the Editor Yuri Merzliakov with the charge to “give a negative review or return without one.” The reason was utterly trivial: It seemed I was a Jew.

Herbert Mehrtens coined the term “irresponsible purity” for scientists who pursued their pure academic fields in the Third Reich and assumed no responsibility for thus serving and strengthening the criminal state (Mehrtens, H., *Irresponsible purity: the political and moral structure of mathematical sciences in the National Socialist state*, Science, Technology and National Socialism, by Renneberg, M. and Walker, M., eds, Cambridge University Press, 1994, 324-338 and 411-413.) The time is long overdue to agree that even mathematicians are not above the standards of decency and not above the law.

Alexander Soifer (March 31, 2006):

- Dear Misha,

I am sorry that my review hurt your feelings. Permit me to answer some of your points. I know personally Mark Saul, and Ilya Muchnik, and Alyosha Kanel-Belov (one of the organizers of the Russian publication on Subbotovskaya). I have never talked politics with Mark. But I cannot imagine a more immoral opinion than that of Vardi, which he expresses on behalf of ALL authors. I completely disagree with you here. What you are saying is irrelevant to the case at hand. You are the editor of the book, and you have allowed Vardi to speak on behalf of all authors, and that includes on your behalf. Your book is not a “prokhodnoy dvor”, nor a discussion group — it is your means of self-expression. You wanted to use Vardi’s math analysis (which was poor already when he chose wrong comparison in IMO), fine. But you let him preach morality, and his morality is immoral — you did not have to allow that. And if you did, and wanted to be so all-inclusive, you could have written your own rebuttal, and explanation that Vardi does not speak for all authors. Ultimately, you are the editor, not a by-stander, and you are responsible for the content of your book — the more so since the book is important to you and you worked on it for 4 years.

What truly bothers me, every time I think about it, is this. You are obviously a good man, “our man,” and you give the platform (your book) to the guy who categorically states that the world must forget and forgive anti-Semites, perpetrators of persecution of the Jews, and invite them as VIP’s to the West. He is “proud” to have done so!

Дорогой Миша!

С удовольствием пишу на родном русском языке. И кириллицей мне значительно легче выразить вам то глубокое чувство удовлетворения, которое испытала я лично и мои многочисленные друзья, ознакомившись с вашей книгой. Жаль, что она недостаточно известна ни широкой публике, ни даже в непосредственно заинтересованной математической среде. Со своей стороны я пытаюсь сделать всё, чтобы её прочитало максимальное количество людей, и каждый раз получаю изъясления благодарности от прочитавших. А ведь и я узнала о ней, можно сказать, совершенно случайно.

Ваша Е.Г. Карпель

16 марта 2006

Daryl Vaughn sci922@hotmail.com (February 16, 2006):

- What should a Jewish child (undesirable for admission to Moscow University as your book describes) have done?

Mathematics is supported by the state primarily because it helps society. A bright, top mathematician at Moscow University would help Russian society. But your book describes a Russian society that was corrupt and evil. Is it not unethical to help such a society? Thus, would it not have been unethical for a Jew to go into mathematics and thereby help his own enemies?

You might argue that the Jew should, once admitted, work to improve conditions in the society. But this is not a mathematician's job, it's a politician's. Such a smart person should go into politics, not math.

For that matter, what should a brilliant Jewish mathematician, suppose the Russian analog of Paul Cohen, have done had he been rejected from Moscow University? Insofar as he does anything useful for the society he only helps his enemies.

And how is the Russian situation even different in kind from today's university admission practices in America, which routinely take race and ethnicity into account?

It seems to me that if we accept that what the Russians did was wrong, then we inevitably must conclude that the what the Jews did, or those who did not actively fight the system, was wrong as well; and furthermore, that the U.S., with its affirmative action, is equally wrong (in which case how are we in a position to criticize)?

I have an alternative hypothesis: that what the Russians did was not wrong at all.

For what the Russians did was wrong only if you accept the premise that the best future mathematicians should be admitted to the University, i.e., those who prove the best theorems and who know math the best.

But suppose we say that rather, the students should be admitted to the University who help the University itself the most? Then we see that part of helping the University is the ability to draw in funds or, in Russia, draw in political support. Since the Jews, as is clear from the book, did not have political support and were unlikely to help get it for the University, it is in the University's best interest not to accept Jews.

Again, this is precisely what happens in the U.S.: in faculty hiring decisions, the key criterion is usually how much grant money the faculty member can bring in. This is another way of saying that the political and economic influence of the faculty member is considered part of his value to the University. No University would hire faculty based only on how talented and brilliant he was - but social, political, and economic factors are given instead primary weight, as it is the future of the University as a whole that is paramount.

Suppose a brilliant mathematician was up for tenure but had been convicted of various drug crimes. Even those who thought he was innocent or who thought drug laws were unfair would still vote against his tenure because (hypothetically anyway) he would not bring in grant money. So how is this different from the Jewish situation in Russia? Like a brilliant U.S. scientist who is poor at grant-getting for whatever reason, the Jews were poor at the Russian analog of grant-getting - and it was in the best interest of the University, thus, to reject them.

Finally, as a comment, the level of scholarship in the Intellectual Genocide chapter was disappointingly poor. The authors continually refer to documents without proper academic citation, or indeed any clue as to where the documents are, how they got them, or how another user could check this work. This dramatically weakens the force of the presentation in my view (but the preceding paragraphs do take as fact its assertions and simply ask: what's wrong with that?).

Oscar Sheynin, June 14, 2006

• Hi,

An addition to your study: the famous Markov published a letter in a newspaper in 1913 protesting against the same practice in a Russian provincial university.

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Andrei Andreevich Markov, 1856 – 1922, one of the best students of Chebyshev, was an outstanding mathematician, Professor at Petersburg University from 1886 to 1905 and a member of the St. Petersburg Academy of Sciences since 1886.

In 1913, a Jewish student M. Zhoftis applied for admission to Kharkov Technological Institute. During his entrance examination in mathematics he was asked to solve the following equation

$$\frac{x^4 + 5}{x + 1} + \sqrt{\frac{2x^3}{x^2 + 1}} = 4x.$$

One can transform it into a polynomial equation of the 10-th order. Zhovtis managed to guess one of its roots,

$$x = 1.$$

Dividing the polynomial of the 10-th order by $x - 1$ one gets

$$-25 + 15x + 14x^2 + 24x^3 + 26x^4 + 4x^5 - 14x^6 - 6x^7 + x^8 + x^9 = 0.$$

M. Zhoftis could not find the solution to the above equation analytically. He described his misadventure in a letter to a newspaper. Markov, upon hearing about this, sent a letter to another newspaper where he called the examination a humiliation [Grodzensky 1987, pp. 102 – 104].