S©MR ISSN 1813-3304

СИБИРСКИЕ ЭЛЕКТРОННЫЕ
МАТЕМАТИЧЕСКИЕ ИЗВЕСТИЯ

Siberian Electronic Mathematical Reports
http://semr.math.nsc.ru

*Том 9, стр. А.40–А.43 (2012)* УДК 51
MSC 01A70

# LARGER THAN LIFE

V. YA. KREINOVICH

Abstract. This is a tribute to Alexandr A. Alexandrov on the occassion of the centenary of his birth.

To adequately describe Alexander Danilovich is very difficult, but it is OK: everyone will describe him from his or her own perspective, and from that, a reader will be able to reconstruct him as he was—just like one can reconstruct a polytope from its 2D projections.

As in a thick 19th century Russian novel, fate prepared me for my meeting with A.D. slowly but surely. For the first time, I heard about A.D. in Summer 1969. It was right before I started taking my classes at the Mathematics Department of St. Petersburg University. With my friend Nikolai "Kolya" Vavilov, we were having a good time at the Used Academic Books bookstore on the Liteiny Prospect. We enjoyed the books, and I enjoyed Kolya's stories about the mathematicians who wrote them. When we came across a book on space-time geometry by Revolt Pimenov (1931–1990), Kolya said: "Of all his students, A.D. Alexandrov probably valued Pimenov the most. And probably cursed him the most. Did you know that Pimenov spent several years in the Gulag?" I was not surprised: "Many people were sent there by Stalin, and many good mathematicians among them." "This is true, but Pimenov was jailed after Stalin's death, when Khrushchev was in full power." That was unusual indeed.

When I became a student, I started attending Pimenov's seminar on space-time geometry. A.D.'s name was mentioned very often there. And then Ludwig Faddeev taught us physics. This course really impressed us. This was probably the first course where we felt that it was no longer just a preparation for interesting things that

This is an authorized English version of an article in Russian which appeared in *Академик Александр Данилович Александров. Воспоминания. Публикации. Материалы.* Ред.: Г. М. Идлис, О. А. Ладыженская. М.: Наука, 2002.

Kreinovich, V.Ya. Larger than Life.



*Поступила 14 июля 2012 г., опубликована 16 июля 2012 г.*

would come later—this was it, the real mathematics, and its real applications. And when he talked about special relativity, Faddeev mentioned, among other things, that there was a theorem proved by A.D. Alexandrov about causality-preserving transformations. That was a sign of quality, almost a sign of eternity.

And then I was having my (officially required) practice with Pimenov, in a Northern town of Syktyvkar to which he was by then exiled—this time by Brezhnev, a practice which the Math Department not only officially approved but even financially sponsored. Throughout the entire semester, whether I was listening to Pimenov's lectures or simply talking with him, I could feel the almost visible presence of "Danilych," like a kind and powerful grandfather, like a guardian angel; and the best praise for my work was "This is worth sending to Danilych."

Suddenly Alexander Danilovich appeared in St. Petersburg. At first there was a flier—of an unusually large size, then came his lecture on geometry of space-time. A large audience was packed, and unexpectedly, at first—instead of formulas and theorems—there pour common sense explanations why all this is important; motivations that we liked so much in American mathematical papers—for the first time we heard them during a talk. I simply fell in love with his style—and with his personality.

And the next morning, another shock: in the Math Department, where everyone is against the communist despots but where everyone is quietly whispering his or her against—because in every student group there in a known KGB informer who always gets failing grades but somehow is never expelled—suddenly loudly, very loudly: "Your Buravtsev is a scoundrel! Dared to inform on me that I was discussing philosophy instead of mathematics! For God's sake! Who wrote the article about geometry of space-time in the *Philosophical Encyclopedia*? Alexandrov wrote. What other philosophy do they want? They should have thanked me for the talk instead of writing their dirty denunciations!"

And then there was the first National Conference on Geometry of Space-Time in Novosibirsk Akademgorodok in October 1974. Pimenov's exile was over, so he was able to come too. Kolya Vavilov was right: Pimenov was the most valued student of A.D. At the banquet, the first toast A.D. proposed was about Pimenov: "In geometry, we study conformal transformations a lot, but everything non-conformal is also important. So let us drink the health of Revolt Pimenov!"

I liked A.D., I liked Akademgorodok, and it looks like A.D. liked me too, because he sent me an official offer to work with him. As required by the police regulations about changing the place of residence, I officially renounced my right to live in St. Petersburg, but in Novosibirsk, in spite of the official invitation, the authorities did not hire me and did not grant me the right to live there. I had no place to live, no money to live on. And I could not return to St. Petersburg because I no longer had the right to live there.

And A.D. started to fight for me. "I could let you live in my house but two bears cannot live friendly in the same den"—and, by the way, he was right. He helped me get a bed in the dorm—and then the authorities threw me out; he helped me become a lecturer at Novosibirsk University, but when he went on a business trip, I was immediately fired—KGB called the University Rector and ordered him to.

Sometimes I felt like there was no way out. I felt like a jailer in a story we learned at school about Lenin's first prison term: "Your struggle is useless, young man, the

regime is as solid as these stone walls." It felt like that, that there was a stone wall all around. It felt that it was impossible to break through it.

But A.D. never gave up. His advises were sometimes unusual, but often helpful. Once Brezhnev said, in his speech, that young scientists need nurturing—the next day A.D., with a copy of this speech printed in the *Pravda* newspaper, goes to the regional Communist Party Committee to argue for me—and "Vladik, go to the Youth Communist League committee, ask them to help."

Sometimes it helped. More often it did not, and then A.D. cheered me by his usual "Never lose your optimism because the worst is still ahead."

I was not the only one whom A.D. tried to help. There were many like me. Sometimes, he succeeded, then he was happy as a clam. How many times I heard his boastful stories and, at the end, right before the final good news: "And all these communist scoundrels... ."

Not only in the more tolerant Brezhnev times he succeeded in fighting the scoundrels, in Stalin's times he was also sometimes successful. When, during Stalin's rule, in the language of those days, "an ideological bomb exploded on the mathematical front" and a "discussion" threatened mathematics—a "discussion" similar to what had just happened in biology where the losing researchers were summarily shot—A.D. managed to convince the bosses that instead of a discussion, the book should be published under the title *Mathematics, Its Content, Method, and Meaning.* What happened then followed a story about a 13th century philosopher and teacher of life Hodja Nasreddin who, in an effort to save his life, volunteered to teach the King's donkey to read in 20 years. When his friends got worried, Hodja said: "Do not worry, in 20 years one of us will be dead: either I myself, or the King, or the donkey." While the book was being prepared, did die the bloody tyrant, and the book—the book is still very much alive. Every year, Dover Publishers send me a catalog, where among the Einsteins and the Hilberts there is this old (but clearly not outdated) book by A.D.

A.D. also liked to tell a story how in a mountaineer camp, at the elevation of 10,000 feet, he authorized a student to be enrolled at Leningrad University. We all had a special attitude towards alpinism. Somehow we believed that an alpinist, a person who risks his life to save others, cannot be a scoundrel. A professor could be a scoundrel, we all knew that, we witnessed it every day, but an alpinist was something sacred, pure. Many encyclopedias had articles about A.D., and each article listed his numerous prizes and awards, but there was one award that A.D. was most proud of—that the National Alpinist Federation certified him as a Master of Alpinism. To us, this award was as convincing a proof of his goodness as a halo above a saint's head.

A.D. did a lot of good, but a saint he wasn't. He liked to chase after girls, he had a short temper and often got very angry—although Pimenov told me "I do not know anything more harmless than A.D.'s anger." For us, his anger was indeed harmless, but for the scoundrels—far from that.

And the scoundrels replied in kind. They chased him ruthlessly and tirelessly like hunters chase a bear. They voted against his students at Ph.D. defenses. They spread false rumors, very clever false rumors so that we young people would not support him. That he was supposedly an Anti-Semite, and that he was brown-nosing Communist dictators. We, who were close to him, knew that these rumors were false but there were many who believed in such a nonsense.

For us he was a father-like figure, who could help you when you needed help, who could give you *Doctor Zhivago* to read—a Nobel-prize winning book for reading which you could still get a jail term under the Communist rule. For those who believed in God (a no-no under the Communists), A.D. was a person to whom you could come for a traditional Easter celebration and not be afraid of getting fired. For us he was a person who hosted Vadim Delone (1947–1983) after Vadim got out of jail where he was placed for defending the freedom of the Czechs in 1968. For us, he was proudly walking with his head straight, but many viewed this same posture as self-promotion.

This attitude hurt him, and he felt bad, but what really made him feel bad was when the scoundrels hurt us, his students, whom he tried to protect as much as his own children.

And when he felt very bad, two things helped him: love and science. I remember, once he had a collision with another skier, his Achilles' tendon was badly injured, and we came to visit him. We could see that he was in pain, so much in pain that he wanted to shriek. I am not sure whether we understood that he was not in a mood for nice words, or whether he himself asked us to leave, but what I do remember well is that before leaving, overcoming his pain, A.D. asked Alexander Kuzminykh to stay and discuss some math—and while they were discussing math, the pain went away! And then his beloved Svetlana came to nurse him and adore him, and he was happy again.

And I? Did I adore him? Not always. In politics, it was not A.D. who was my hero, but Sakharov—a knight in shining armor, a person who never tells lies, a saint.

But in mathematics, I did adore him. His ideas, his intuition: I was simply awed! For months, I would think about an idea, and when I finally made a step forward and started explaining it to him—he would immediately come up with the complete solution! I was awed by him, I still am. In English, there is a phrase for which there is no direct equivalent in Russian—"Larger than life." This is what he was: larger than life.

What made the man he was? Maybe the fact that he always looked at all the problems from the viewpoint of eternity. "From our entire civilization," he once said, "only Christ and Buddha will remain forever ..."

Vladik Kreinovich
Department of Computer Science,
University of Texas at El Paso,
500 W. University,
El Paso, TX 79968, USA
*E-mail address*: vladik@utep.edu