

## PAST PRESENT

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ABSTRACT. In 2014, the Development in Language Theory conference took place in the city of Yekaterinburg, in the Ural mountains of Russia. I used to live there. In Soviet times, there were no international conferences in the city. The whole region of the Urals was closed to foreigners. As I walked the streets of Yekaterinburg, I thought of my friends there and of Faulkner's lines "The past is never dead. It isn't even past."

To Misha Volkov  
on the occasion of his 60th anniversary

**The Urals.** Since 2001, a Development in Language Theory (DLT) conference takes place in Europe in odd years and outside Europe in even years. The 2014 venue was Yekaterinburg. I lived there from 1959 to 1971. The city was called Sverdlovsk in Soviet times. Yekaterinburg is in Asia but barely. We used to hike to a simple stone in the forest marking the Europe-Asia border. Nowadays the border is closer to the city. Both the city and Europe seem to expand a little. The border, marked with a handsome monument, became a tourist attraction.

Yekaterinburg is the industrial and cultural center of the Urals, though it has a rival of sorts in the city of Chelyabinsk located about 200 km south of Yekaterinburg. In the morning of February 15, 2013, a large meteor exploded over Chelyabinsk. The Russian reaction was characteristically twofold: conspiracy theories and jokes. The very next day, a childhood friend of mine (I grew up in Chelyabinsk) forwarded to me a little anonymous poem:

Ничего так не бодрит  
как с утра метеорит.

In loose translation:

But nothing energizes like  
a meteoric morning strike.

**UrGU, the Ural State University.** The DLT lectures were given in the main building of the Ural State University. The university is known by an acronym UrGU where "G" reflects the first letter of the

Russian word for state. Technically, UrGU ceased to exist in 2011 when it merged with the local Polytechnic to form the Ural Federal University. The Faculty of Mathematics and Mechanics of my days is now the Institute of Mathematics and Computer Science.

UrGU is my alma mater. I studied and then taught there. The hard-sciences part of UrGU was solid and professional. The standards have not been compromised. In my time, about a quarter of math students would survive the five years of study and graduate. I came to UrGU after one and a half years at Chelyabinsk Polytechnic where — at least in my Automotive Division — cool students pretended not to study. Mathematics was belittled to “arithmetic,” technical drawings to “doodles.” At the UrGU Math Department, students weren’t shy to study or being seen to study.

In the harsh reality of Soviet life — with its incessant propaganda, informers, denunciations, and worse — the hard-sciences part of UrGU was a rare oasis of decency.

Of course the Soviet pseudo-sciences — history, philosophy, etc. — were represented at UrGU as well. And those classes were super boring, though there were exceptions. In the obligatory class on atheism, our professor spent much time describing Christian sects surviving in the USSR, so that in effect the class was more on the anthropology of religion than on atheism. My philosophy professor loudly hammered down the dogma of dialectical materialism. But, on philosophy seminars, his assistant would let us lose to argue; at the end he would quickly restate the dogma and disappear.

Fortunately the hard sciences were dominant at UrGU at my time. All rectors (the rectorship being the top position) were from hard sciences. I was told that, a little before my time, a professor of philosophy came close to becoming a rector of UrGU. The leading hard-sciences professors stopped him by declaring that they would leave. That required courage, a lot of courage.

The Department of Mathematics and Mechanics had an obligatory “philosophical seminar.” Various professors spoke about philosophical aspects of their areas. For example, Prof. Nikolay Nikolayevich Krasovsky spoke there about philosophical problems of control theory. I spoke there once about philosophical problems in logic. After leaving the Urals, I taught for a year at the Kuban University in the city of Krasnodar and had to attend a philosophical seminar that studied the latest decisions of the Politburo of the Communist Party of the USSR. I mentioned that we could be doing something else, like in UrGU. Everybody moved away from me, as if I was infected with leprosy.

Speaking about courage, my UrGU colleague, Habib Halilovich Muhammedjan, told me how my advisor, Petr Grigoryevich Kontorovich, saved his thesis defense and saved him from a big trouble. The thesis, written under the supervision of Sergei Nikolayevich Chernikov, was in group theory. The defense took place in 1950, during a vicious chauvinistic campaign in the USSR against “rootless cosmopolitans” [5]. In school they taught us that everything was invented in Russia. Russia is the homeland of elephant, ran the joke of the time.

A party boss attended Muhamedjan’s defense, and at some point he shouted: “In what country was this thesis written?” The thesis had many foreign references and did not mention Stalin’s contributions. The audience froze; people were frightened. The boss repeated his question again and again. Kontorovich went forward and spoke, and spoke, and spoke. The error is inexcusable, absolutely and utterly inexcusable. But the error would be much worse if it happened in any other area of science. He counted all Russian contribution to group theory, and he presented group theory as very much a Russian thing. Eventually the boss calmed down and let the defense proceed.

**Misha Volkov and the UrGU computer science.** Now let me switch gears and say a few words about my colleague and friend Mikhail Vladimirovich (Misha) Volkov who is celebrating his 60th birthday and who spent in UrGU his whole career.

Misha and I come from the same scientific school, the Yekaterinburg school of algebra, the first scientific school in the Urals [1]. At my time in UrGU, Misha was a school boy. My wife Zoe remembers him well, as he was a brother, a much younger brother, of her close friend Ella Villensky. The girls were math students at UrGU. Misha tried to read their textbooks and interrupted their study in order to explain them his own theories. They would politely listen to him for a while and then send him away, to develop his current theory further, so that they could resume their study.

Misha graduated from UrGU in 1977 and became a PhD student of Lev Naumovich Shevrin [2]. Misha defended his PhD thesis, on ring theory, in 1980 in Kishinev, currently Chisinau, the capital of Moldova. Why not in his own university? Because of the peculiarities of the Russian system of scientific degrees. Let me use this opportunity to say a few words about that system to my Western colleagues.

There are two scientific degrees: candidate and doctor. To earn the candidate degree in a science area, say in algebra, one is required to prove his or her ability to conduct independent research. In hard sciences, the degree can be identified with the familiar PhD. The doctor

degree is much higher. To earn the doctor degree, one is required to exhibit leadership in a scientific area. At universities, the doctor degree is a necessary and in most cases sufficient condition for full professorship. An academic institution is authorized to conduct thesis defenses only in scientific areas where it has sufficient expertise. Positive results need to be approved by the Higher Attestation Committee of Russian Federation that grants scientific degrees. More details can be found in [3, 4].

In 1977, UrGU could not conduct candidate defenses in algebra as they had only 2 doctors in algebra while at least 3 were needed. That is why Misha defended his candidate degree in Kishinev. When Misha was ready to defend his doctor thesis in algebra, UrGU had 4 doctors in algebra but 5 were needed to conduct doctor defenses. Again Misha had to go elsewhere. His second defense, in semigroup theory, took place in 1994 in St Petersburg.

Being trained in algebra, Misha became an unexpected father of computer science in UrGU. In early 1980s the local Polytechnic needed somebody to teach graph and networks algorithms, and Misha was happy to help and earn some money in the process. Then, inspired by a talk of Valery Goppa, he initiated a course on error correcting codes in UrGU. Probably the most consequential was a course on complexity theory that Misha initiated in late 1980s.

The original motivation behind those courses — and similar courses initiated by Misha's colleagues, especially Alexey (Alyosha) Zamyatin and Evgeny (Zhenya) Sukhanov — was that the students should know the stuff. In the process, research in computer science emerged. By the early 2000s, UrGU became a noticeable Russian center of computer science research; by now it is one of the most prominent.

By the way, in 1990s, at a computer science conference in Pittsburgh, a young Russian researcher Andrei Bulatov told me that he was my scientific grandchild of sorts because his adviser, Zhenya Sukhanov, used to attend my logic seminar in UrGU. Among scientific brothers of Andrei Bulatov are Andrei Krokhin and Arseny Shur. Indeed, Zhenya Sukhanov attended my seminar, and so did Sasha Livchak (who also contributed to UrGU computer science) and Alyosha Zamyatin.

It wasn't only academic teaching and research that connected Misha to computing. Internet providers appeared in Sverdlovsk about 1990, and they employed some of Misha's students and junior colleagues. Misha was eager to establish internet access at UrGU. There were computer geeks there who were enthusiastic about the idea and knew what to do. The expense was small but the university had no legal way to pay it. So a deal was arranged, between an internet provider and Misha

as a private customer, which in effect provided UrGU with internet access. The necessary funds — about \$300 a year — were contributed by UrGU graduates working abroad.

When, a couple of years later, the Russian Ministry of Education started to create state-wide network for universities, the universities competed for the role of hubs which came with some money, equipments and further advantages. Those roles were assigned primarily to technical universities, but in the Urals, UrGU won the competition because it already had a working network.

“Fate leads the willing and drags along the reluctant,” said Seneca. In bringing computing science to UrGU, Misha was a willing “conspirator.”

**Epilogue.** The USSR collapsed in 1991. The people of Russia defeated communism, and it seemed for a while that Russia was quickly becoming a normal European country. That changed unfortunately. To use the famous phrase of Yogi Berra, an American philosopher and baseball player, “it is like *deja vu* all over again” In a recent letter (I am writing this in September 2015), my Moscow friend and colleague recalls an old Soviet joke about a pessimist who sees a dark tunnel, an optimist who sees a light at the end of the tunnel, a realist who sees a train, and the train operator who sees 3 idiots standing on the tracks. Indeed, the past is not dead, and it isn’t even past. I hope though that things will change again, to the best.

Be as it may, I wish the best to Misha Volkov and all my Russian colleagues. I wish that the Institute of Mathematics and Computer Science of the Ural Federal University preserves high standards and the tradition of decency.

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