Interview with Georgy Adelson-Velsky, September 1, 1990, Moscow

E.D.: So what do you remember about our common début, working for Gelfand?
G. Adelson-Velsky.: What I remember about our common debut is how you and I were making up a problem for a math Olympiad. The problem asked to come up with a system of axioms, slightly weaker than those in geometry. It had to do with triangles. We spent three days making it up; creating the appropriate conditions so there is a finite number of solutions. We did not limit it that only one line can pass through two points. There could have been multiple lines. So we thought of a situation like that. The problem was administered, and somebody partially solved it. Unfortunately, nothing came out of that person later on. But I have to admit that during this work with you I was amazed by your excellent abilities in combinatorics.
E.D: You are just flattering me.
G. A-V.: No, and I will tell you that even later my favorite work of yours is the work on Lie groups. It has to do with roots, which are, once again, combinatorics. I have always thought that your main talent is combinatorics. I was very surprised when you started working on the probability theory. Frankly, I have always thought that one can know math well, but there is some inner probability feel, which was brilliantly displayed by Kolmogorov, and later also by Kronrod.
E.D.: … And I did not have it. I have something different. Some people see the probability theory as physicists. They rely on their physics intuition. I am more of an algebraist, even in the probability theory. But any field within math has room for varied personalities. But you are only recollecting the contacts between the two of us, and it has little to do with Gelfand.
G. A-V.: But when we were part of the Gelfand's seminar, we did not do anything together at all.
E.D.: It doesn't have to be together. Talk about what you were doing. As I understand, your sparkling debut was your work with Kronrod, the "hats" problem…
However, the hats appeared in the Bernstein's problem that you were working on alone. And then you were working with Kronrod on solving the problem, proposed at the lectures by Luzin.
G.A-V: Yes, but I don't think that Luzin's problem had anything to do with Gelfand's seminar.
E.D.: I am not limiting you only to the Gelfand's seminar. Were you Gelfand's graduate student?
G.A-V.: Yes.
E.D.: But Bernstein's and Luzin's problems didn't have anything to do with Gelfand?
G.A-V.: No, they didn't.
G.A-V.: The first thing I worked on under Gelfand was partially ordered spaces. I wrote a review on what is available in the literature, but most importantly, it was a great educational experience. Later on I made use of this education a lot. In the finite-dimensional case it is now called linear programming. At that time it was at its inception, but Freudenthal's paper that I have reviewed treated the infinite-dimensional vector spaces.
My second work was interconnected with a work by Kolmogorov. It involved a direct integral in the representation of non-commutative ring. Kolmogorov was the only one to understand it. Naimark, who was an opponent to my dissertation, thought that I was fighting ghosts. But I wasn't fighting ghosts.
E.D.: Is it something like measurable choice? It is a very important topic in itself.
G.A-V.: Yes, but I have never published it. I also remember my long interaction with Yura Shilov. Gelfand would use the two of us for all reviews. We would examine all the works. And later Ivan Georgievich Petrovsky asked us to examine the work by Lednev.

E.D.: Oh, yes! I remember that famous story. First it was stated that Lednev came up with the proof, and later there was an amendment that Giraud proved it, not Lednev.
Did the seminar have a significant influence on you?
G.A-V.: A fairly big one. Because Freudenthal… My introduction to a work by Levitan was the starting point for my dissertation. It produced the initial spark of the ideas, even though later I deviated from it.
E.D.: So you entered the new field.
G.A-V.: I have, in fact, made a childhood dream come true. My initial perspective was that of humanities, and at some early age I decided that science had not yet proven the truth of materialism , and it is important to figure out what could be proven, and what couldn't. And rapidly, through chemistry and physics, I rushed into mathematics. Later on, as a first year college student I was attending course by Sofya Aleksandrovna[1], which has shown to me that this outrageous situation arises in mathematics as well. For instance, using an immeasurable selection. For some time I decided to act as a naïve mathematician. But in my soul I have always been drawn to something very strictly provable.
And then it turned out that the restricted predicate calculus is somewhat provable, and no paradoxes are present, and there is a fairly convincing proof that it is non- contradictory. So I started looking for a field of math that, on the one hand, would be non-trivial, and on the other hand, would fall into the frame of restricted predicate calculus.
E.D.: And this is when the computers came around.
G.A-V.: And this is when discrete math came around. Besides, since I have never been satisfied by pure math, I started working with discrete math not only because of that, but also because I wanted to create a real artificial intelligence. I knew that the idea of the 50s and 60s that we will have it in the near future is nonsense. I knew that it will take more work than the controlled nuclear fusion, which was projected to happen by 2020. It will be a lot later. I knew that it was the right time to begin. And when I was thinking what kind of math would aide in this, I thought that discrete math might. However, now I am leaning towards the idea that the probability theory is very necessary as well.
And that book I was telling you about yesterday. It's about the fundamentals, and it has a little about this as well.

[1] Sofya Aleksandrovna Yanovskaya (1896-1966) – Professor at the Moscow University.