My Teacher

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Abstract: In this talk I would like to share some recollections, pictures and documents related to my Teacher Professor Vladimir Andreevich Yakubovich with the community.

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1. INTRODUCTION

I was lucky in my life to have a privilege of learning from one of the greatest minds in control, Professor Vladimir Yakubovich. In this talk I would like to share some pictures and documents with readers.

First time I heard the Yakubovich's name from the eldest brother of my friend who was an engineer at the Computer Center of Saint Petersburg State University (SPbSU) in 1963 when I was fifteen. Since I was strongly interested in cybernetics I decided to enter the Faculty of Mathematics and Mechanics of SPbSU in order to study cybernetics at the Yakubovich's group.

First time I met Yakubovich in April 1968 when he suggested me to give a talk at his seminar. Since that time I enjoyed meetings and discussions and learned a lot from him. Later in the 1990s I travelled with him in different countries and realized that he is considered as one of the founders of the modern control theory by the whole control community.

I was very proud when I was asked to write a (formal) introduction from his group for the IEEE Control System Award in 1995. The text is in the next section. It was not published before.

2. NOMINATION TO IEEE CONTROL SYSTEMS AWARD

Professor V.A.Yakubovich graduated from The Moscow State University where his teachers were I.M.Gelfand, A.N.Kolmogorov, V.V.Nemytsky. Later he worked with such eminent mathematicians like M.G.Krein and F.R.Gantmakher, absorbing their experience. The early research interests of V.A.Yakubovich were linked with linear differential equations with periodic coefficients. His book (joint with V.M.Starzhinsky) printed in 1972 and later translated into English became one of the most frequently quoted books in the field. An exciting example of single result having the strongest influence on the whole modern control theory gives the famous Kalman-Yakubovich Lemma. Its first version was published by V.A.Yakubovich in 1962 in the USSR (the subsequent paper by R.Kalman was published in 1963). Based on this lemma V.A.Yakubovich worked out the general method of solving various nonlinear control problems by reducing them to some linear matrix inequalities (LMI). The meaning of this method is still increasing (see, e.g. Proceedings of the 33rd CDC where the special session was devoted to LMI with papers coauthored by M.Safonov, A.Laub, R.Skelton, etc.). S.Boyd and coauthors in their recent book devoted to LMI called V.A.Yakubovich "the father of this field".

One more field where the meaning of Yakubovich's works can hardly be overestimated is mathematical theory of adaptive control. He gave probably the first rigorous definition of adaptive system (1968) and the first rigorous solution to the adaptive control problem for discrete-time dynamic plant (1972, 4th IFAC Congress). His "method of recursive goal inequalities" has been applied to various problems of adaptive control and presented in a few monographs published in 1980s.

In spite of being still not translated into English these monographs are known among specialists, see, e.g. review by (Ortega, 1990) Professor Yakubovich has numerous present and former students and gives them a brilliant example of remaining high scientific and moral standards independently of political situation in the country.

3. SOME PICTURES

Some pictures from my archive are posed below.

	*VladimirYakubovich - student of Moscow State University in 1946-1949 (courtesy of E.D.Yakubovich)*

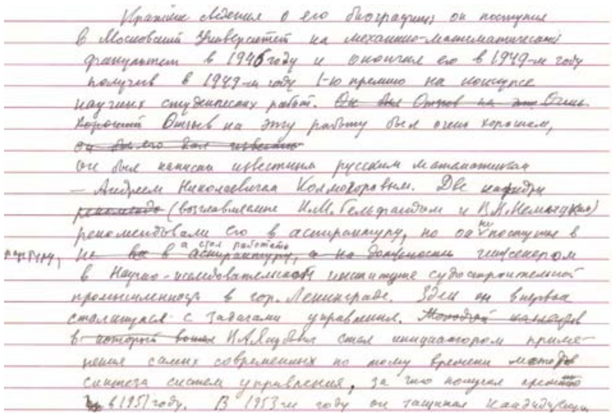
Vladimir Fomin and Vladimir Yakubovich in Saint Petersburg University, (1970s)

Alexander Fradkov, Iven Mareels,Romeo Ortega, Nikita Barabanov and Vladimir Yakubovich (Sydney, 1994)

Yakov Tsypkin and Vladimir Yakubovich (1990s)

In Saint Petersburg, near the Hermitage, 1996 (left to right: Sergey Gusev, Vladimir Yakubovich, Ekaterina Yakubovich, Anders Lindquist)

Karl Astrom and Vladimir Yakubovich (Lund, 1992)



Краткие сведения о его биографии: он поступил в Московский Университет на механико-математический факультет в 1946 году и окончил его в 1949-м году, получив в 1949-м году 1-ю премию на конкурсе научных студенческих работ. Отзыв на эту работу был очень хорошим, он был написан известным русским математиком — Андреем Николаевичем Колмогоровым. Две кафедры (возглавляемые И.М. Гельфандом и В.В. Немыцким) рекомендовали его в аспирантуру, но он не поступил в аспирантуру, а стал работать инженером в Научно-исследовательском институте судостроительной промышленности в гор. Ленинграде. Здесь он впервые столкнулся с задачами управления. В.А. Якубович стал инициатором применения самых современных по тому времени методов синтеза систем управления, за что получил премию в 1951 году. В 1953-м году он защитил кандидатскую

V.A. Yakubovich's Bio written by himself in third person in 1997 in Bratislava (courtesy of V.Vesely)

Vladimir Yakubovich (Repino, Conference APM 2000)

Vladimir Yakubovich in his apartments with Rudolf Kalman, 2006.

Vladimir Yakubovich with his wife Ekaterina at his 75th birthday celebration (Dept. Theoretical Cybernetics, Peterhof, 2001)

Vladimir Yakubovich during the seminar *in his apartments*, 2010.

Vladimir Yakubovich with Gennady Leonov and Nikita Morozov at his 75th birthday celebration (Dept. Theoretical Cybernetics, Peterhof, 2001)

CONCLUSION

The documents and the pictures recall pieces of an interesting and remarkable life of my beloved Teacher, one of the founders of the modern control theory. More information and the list of the research works of Vladimir Yakubovich can be found in (*Gelig et al*, 2006) and special issues dedicated to his 80th birthday.

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