

**Acceptance Speech by Anders Lindquist
for the 2020 IEEE Control Systems Award
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I am very honored and grateful to receive the IEEE Control Systems Award, joining so many distinguished scholars before me. I also congratulate Hidenori Kimura for next year's award. I would also like to thank all my coauthors, who are too numerous to be all mentioned in the short time allotted for this talk.

I was born in 1942 in the Swedish city of Lund, where my father was a professor of Theology and my mother a student of Languages and Literature. As a young boy, I had the privilege to attend the more elitist school system than generally available in Sweden. At a time when I had not yet turned 17, I got a scholarship to spend my senior year in high school in the United States as a foreign exchange student. This was in 1959, when Eisenhower was still the President of the United States. I arrived at a time when the Soviet Union had just launched its Sputnik satellites, thus achieving a lead in the cold-war race for space. This led to the "Sputnik scare" in the United States, and Americans were considering the possibility that the decline of their school system was causing them to get behind. Despite being a young kid, I was invited to give lectures on education in Europe at Rotary clubs and school board meetings, and at two occasions I was interviewed on local television on these issues.

By 1969 the United States had been able to put a man on the moon, and later in 1972 Rudy Kalman would tell me that this could not have been achieved without Kalman filtering. I first met Kalman in Vienna, Austria, in the spring of 1972. I had just finished my PhD at the Royal Institute of Technology (KTH), Stockholm, Sweden, and I was invited to give a talk at a small workshop that Kalman also attended. Apparently Kalman was favorably impressed with my talk, for he took me out for dinner the same evening and immediately invited me to come over to Florida for the coming academic year. Kalman had just moved from Stanford to the University of Florida, and this is how I became his first postdoctoral associate in his new Center for Mathematical Systems Theory in the fall of 1972.

After Florida I had a full academic carrier in the United States, lasting for ten years. In the fall of 1973, I met Giorgio Picci at Brown University, and this was the beginning of a long friendship and collaboration that still continues today. Giorgio got me interested in stochastic realization theory, and I visited him many summers in Padova. This eventually led to numerous joint papers. We had a contract with Birkhäuser to deliver a manuscript for a monograph by December 1989, but we missed the deadline by more than 25 years, and our 800-page monograph on Linear Stochastic Systems was finally published by Springer in 2015 and, in Chinese translation, in 2018.

In the end of the 1970s I met Chris Byrnes at a CDC conference. We immediately became friends, and we eventually published over 40 papers together on a number of topics. He was a cool guy with ponytail at that time. Chris had a great sense of humor, and it was always a pleasure to be around him. He tragically died in 2010 when visiting me in Stockholm. Together with Stephen Boyd and Tryphon Georgiou I was waiting for Chris to join us for dinner in my home, but he never showed up. The next day he was found dead after having slipped in the bathroom hitting his head.

During my time in Florida, I had learned about the covariance extension problem, of which Kalman was obsessed, as he had failed to solve it. I got Chris interested in it, and we spent quite some time producing some preliminary results, when we discovered that Tryphon Georgiou, who had been a student of Kalman, had already obtained some important basic results on that problem. However, with the help of S. V. Gusev and A. S. Matveev, we were able to complete the proof, proving a conjecture by Tryphon, and later we introduced an optimization approach to solve the problem. This led us to a long stretch of collaboration with Tryphon, which I continued after the death of Chris. Tryphon became my close friend, and we still work together and talk regularly over the phone and at mutual visits.

In the 1990s, after the fall of the Soviet Union, I also had a long collaboration with Vladimir Yakubovich, famed Russian control theorist and in fact the winner of the 1996 IEEE Control Systems Award. I had visited the Soviet Union at many times during the 1980s, as, on my first visit there in 1984, I had met the woman who would become my second wife – she is now deceased, as is my first wife – and Giorgio Picci was my Best Man at the wedding in Marriage Bureau #1 in Moscow. He was also the Best Man when I married my third and present wife, Fang, who is Chinese. My thanks go to her for her support and for accepting a husband who sometimes is more absorbed in his own thoughts than paying attention to her. Living with a scientist is not easy. Among my other coauthors, I should also mention György Michaletzky, Johan Karlsson and Axel Ringh, with whom I have several papers.

I have had the privilege of being a professor on three continents: in the United States, in Sweden and in China. Over the years I have acquired a large number of life-long friends in the scientific community, and to mention them all here I would need another ten minutes, and I might still miss recognizing some of them. However, I need to mention the rest of the class of 1942, which, in addition to Giorgio Picci and myself, includes Art Krener and Alberto Isidori. We plan a joint party for our 80th birthdays. I would also like to mention one friend who is neither an engineer nor a mathematician, namely the Canadian poet, historian and Shakespearean scholar Jonathan Locke Hart, who was my neighbor for several years in Shanghai. We met regularly for long discussions on history, philosophy and literature over a glass a wine, which was very rewarding for me and helped preserve my sanity. He even thanked me in his book on Aristoteles, which was quite undeserved.

Finally, I have been asked to show the certificate that I would have received in this ceremony during more normal circumstances. Here it is, but of course it would have been nicer to receive it in Jeju Island, Korea, as was originally intended. I am also hanging the medal around my own neck, as this cannot be done electronically. Thank you for listening.