

# TO OUR FRIEND AND COLLEAGUE

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On February 11, 2005 our profession lost, at the age of 96, one of its most prominent members, Russian Academician Vladimir Alexandrovich Kotelnikov. Those of us who were honored to know him will never forget his gentlemanly manners, scholarly nature and perpetual energy. All of this was combined with noticeable modesty. Professor Kotelnikov never stopped working, in fact to the end of his life, always paying attention to details, always asking questions.

Academician Kotelnikov pioneered Russian communications science. He created a «parallel universe», over the same period of time, independently deriving many of the concepts for which Shannon, Nyquist and others are better known in the West. Three outstanding contributions are:

- His discovery, contemporaneously with Nyquist, of the limitations of waveform sampling;
- His «Theory of Optimal Noise Immunity» (doctoral dissertation, equivalent to a postdoctoral degree in the West, 1947), reporting on work done over many years, that derived a key component of modern digital communication in noisy channels, the ideal matched filter receiver; and
- His management of many aspects of the Soviet and Russian radar astronomy programs. Using simple mathematics, his work was able to illuminate a number of penetrating and fundamental truths about communications

Despite obstacles imposed by the Cold War on the exchange of technical knowledge, Academician Kotelnikov created a communications science that supported Russian industry and allowed Russians to compete in space exploration and in the arms race. He was one of a kind in the universe created by him and a handful of colleagues. When he and his «school» were discovered by the global professional community he was accepted as a prominent member and gained recognition among peers worldwide.

Vladimir Alexandrovich Kotelnikov was born in 1908 in the city of Kazan. He received his Radio Engineering diploma at the Moscow Power Engineering Institute in 1931 and his Candidate (PhD) degree in 1938.

He was well recognized at home. His awards included the highest honors of the U.S.S.R.: Twice Hero of Socialist Labor, twice recipient of the Stalin Prize (later renamed the Government Prize) and also the Lenin Prize, six times decorated with the Order of Lenin, and recipient of the Order for Services to the Fatherland, first class. He also received, in 1999, one of the most prestigious European awards, bestowed by the Eduard-Rhein-Stiftung, for theoretically exact formulation of the sampling theorem. His first major honor from the IEEE was the 1973 award for International Communication, which he proudly displayed in his home.

In 2000 an IEEE delegation attended the celebration of his 92nd birthday (picture below) in Moscow Science House.

Our mission included delivering a medal to our distinguished colleague. In 2000 Academician Kotelnikov was awarded the IEEE Alexander Graham Bell Medal. The citation

read: «For fundamental contributions to signal theory.» Full recognition by the global professional community caught up with the ailing scholar, luckily not too late.

And now he is gone. He is survived by two daughters, Natalia and Marina, and seven grandchildren. One of his grandsons, Alexei, lives in New Jersey and works at Rutgers University, not far from IEEE headquarters. He is also survived by his loyal friends and colleagues, employees of the Institute of Radioelectronics of the Russian Academy of Science, which Academician Kotelnikov founded and which he served as director (more recently Emeritus) until his last day. He also served as a Vice President of the Russian Academy of Sciences for 19 years, and as the First Vice President for 13 years. He was for 60 years at the heart of the Moscow Power Engineering Institute, where he was a student, instructor, and research Professor, and where he served as Dean of the Radio-Technical Department for 36 years. And we, too, the members of the Institute of Electrical and Electronics Engineers, inherit his contributions and insights.

In spite of numerous titles and positions, in spite of countless awards and orders, Academician Kotelnikov was proud to be one of us. He was an IEEE Life Fellow, and was an active member of the Executive Committee of the IEEE Russia Section. He was always happy to greet IEEE visitors to Russia especially since the dawn of Perestroika. He was honored to receive the IEEE's Alexander Graham Bell medal and was proud to have friends among our leaders. We will remember him as one of us.

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