Andrzej Rakowski, 1931–2018

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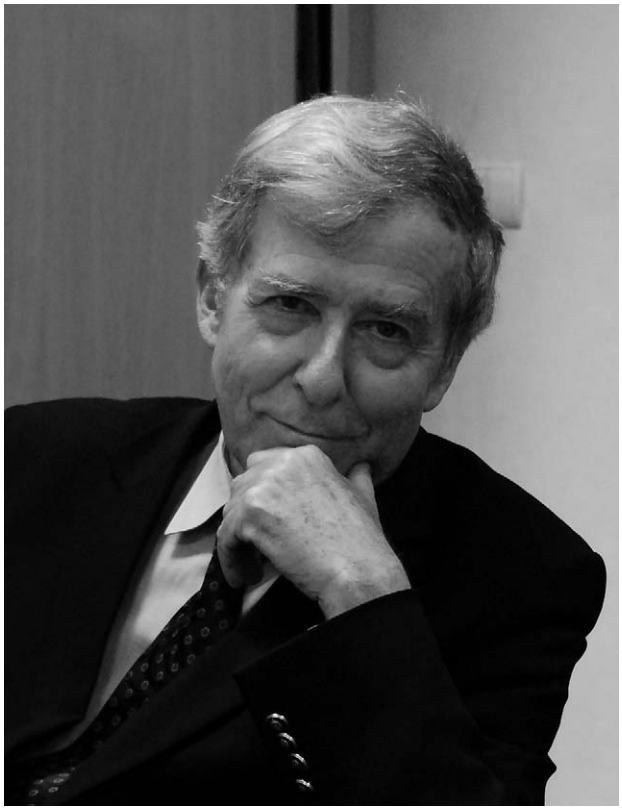

Our community has lost a truly exceptional man and scholar who combined the scientific worlds of acoustics, psychology, and music in a unique way during his career that spanned over half a century. Andrzej Rakowski, Emeritus Professor at the Fryderyk Chopin University of Music passed away on April 3, 2018 in Warsaw, Poland, at the age of 87. He was an internationally acclaimed authority on musical acoustics and psychoacoustics and a major figure in auditory perception research.

He was born in Warsaw on June 16, 1931. After graduating in electronic engineering (Warsaw University of Technology, M. Sc. in 1957) and music theory (State Higher School of Music in Warsaw, M. A. in 1958), he went to Great Britain on a British Council Scholarship (1958/59) and worked at Durham University, King's College, Newcastle upon Tyne with one of the most renowned specialists on acoustics of musical instruments, Professor E. G. Richardson. Later, after defending his doctoral dissertation (Warsaw University of Technology, D. Sc. in 1963, thesis: "Initial transients in sounds of wind instruments") he was nominated to the position of Assistant Professor at the newly opened Department of Sound Engineering in Warsaw Higher School of Music (since 2008, Fryderyk Chopin Music University). His research interest turned in the direction of music psychoacoustics and he focused on the issues concerning the perception of pitch. He received a second doctoral degree (*habilitation*) in art sciences (musicology) from the University of Warsaw in 1977 (thesis: "Categorical perception of pitch in music") and became an associate professor (1982) and then a full-professor (1989), as conferred by the President of the Republic of Poland.

During his career he served as a researcher, lecturer, chairperson, member, and consultant in academic institutions, scientific organizations, and various experts' panels. From 1953 until his retirement in 2001, he was associated with the Fryderyk Chopin Academy of Music, Warsaw. Between 1972 and 1974, he served as the Deputy Rector for Scientific Affairs and was elected as the Rector of the Academy for two terms: 1981–1984 and 1984–1987. He was the founder of the Musical Acoustics Laboratory at the Fryderyk Chopin Academy of Music, which he headed for 34 years (1968–2001). As a part-time professor he also cooperated with the Institute of Musicology, University of Warsaw (1987–2003) and the Institute of Musicology, Adam Mickiewicz University in Poznań, Poland (1997–2009). He was acknowledged, both in Poland and internationally, as an outstanding academic lecturer. Under his guidance 17 doctoral dissertations were prepared and defended at various university-level institutions in Poland. Many of his doctoral

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students became accomplished scholars and academic lecturers.

He was very active in many prestigious scientific organizations in Poland and abroad. In 1994 he became an associate member of the Polish Academy of Sciences and served as the President of the Committee on Acoustics of the Academy from 1996 to 2007 (Honorary President since 2008). He was committed to establishing the European Society for the Cognitive Sciences of Music (ESCOM) as one of its founding members and served as the President of ESCOM between 2000 and 2003. In recognition of his work, he received a number of prestigious awards (i. a., an Honorary Member of the Polish Acoustical Society, since 2004; an Honorary Member of the Polish Phonetical Association, since 2001; a Fellow of the Acoustical Society of America, 2001).

His scientific legacy is impressive. During his successful career, he published over 200 influential research articles and several monographs. He was particularly interested in the acoustics of musical instruments. In the 1960s and 1970s, he conducted wide-ranging experimental research and organized numerous applied projects for the music industry in Poland. He also established the Music Instruments Laboratory at the Fryderyk Chopin Academy of Music that for many years was the research and development department of the Polish Music Industry Association. In the mid 1960s, he started his pioneering and interdisciplinary research in psychoacoustics and music perception, the areas in which his accomplishments were recognized internationally. He mainly focused on the issues concerning pitch perception, pitch memory, and pitch phenomena in music, which were themes he continued to pursue throughout his research career. He took a psychoacoustical perspective in his research on pitch perception, in which he investigated, among others, pitch corresponding to noise edges, frequency difference limen, and pitch strength. Notably, in this line of his research, he demonstrated the phenomenon of post-stimulatory pitch shift and interpreted this in association with forward masking and the spectral pitch theory. Extending his perspective to perception of musical pitch, he investigated the intonation of musical intervals. From many experiments in which musicians assessed the intonation of intervals presented in isolation and in musical context, he demonstrated that expert musicians preferred intervals slightly deviated from theoretical tuning systems and these deviations were strongly dependent on the musical context (e. g., musical tension/resolution and melodic movements). He introduced an innovative concept of musical intonation variants accepted in music theory and music psychoacoustics. A topic in which he had special interest was the phenomenon of absolute pitch (AP), particularly important for an understanding of the function of memory for pitch in music. He carried out several experiments concerning various aspects of AP (including criteria for AP possession, accuracy of tuning its standards, categorical perception in AP, classification of different types of AP, etc.). In a pioneering way, he developed the methods of examining the various types of AP and pointed out possible problems of AP possession. He put forward a unique theory of pitch from a wide perspective of human communication, and provided a well-organized view on complicated aspects of pitch in music. In this theory, the structure of the musical domain of pitch sensation is divided into two perceptual qualities, each consisting of two perceptual dimensions: pitch magnitude (consisting of continuous tone height and categorized pitch classes) and pitch distance (consisting of continuous pitch intervals and discrete categories of musical intervals). On the basis of experimental data and theoretical considerations, he proposed a functional model of musical pitch, in which he emphasized the importance of the memory constraints and extensively discussed musical pitch phenomena in relation to time course and capacity of working memory. In this line of thinking, he seemed to extend his perspective from psychoacoustics to cognitive psychology.

He was also interested in timbre and its musical significance, focusing mainly on roughness and sensory/musical dissonance. He extended his research on timbre to applied areas and advised the manufacturers of musical instruments. His research on musical timbre as well as on pitch and loudness led to an establishment of an innovative course for sound engineers called timbre solfege in collaboration with his close co-workers. This course was introduced to the Fryderyk Chopin Academy of Music in 1976. Its purpose was to develop an auditory sensitivity to auditory characteristics associated with the spectral and temporal properties of sounds. Later, similar courses were implemented in several schools in Europe and America.

During his last years, he was continuously involved in a cross-cultural project on absolute pitch and relative pitch in collaboration with international colleagues. This project revealed that AP is highly prevalent in music students in Japan and China compared to those in Europe and America. In contrast, the Japanese music students performed more poorly in the relative pitch task than the Western students. These contrasting results imply problems in music pedagogy due to

socio-cultural misunderstandings about musical significance of AP. His passing was when the final report of the project was in the review process for publication in *Music Perception*.

His death is not only a loss to his family, but to his many friends, colleagues, students and the whole scientific and academic community. For those of us who knew him well, he was a gracious and people-oriented individual. We will remember him as a good man, a brilliant and open-minded researcher, and a music lover who in a unique way crossed the boundaries separating science and art.

Requiescat in pace.