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WILLIAM R. WADE THE SCIENTIST, THE EDUCATOR, THE COLLEAGUE AND FRIEND

FERENC SCHIPP

Dear Colleagues!

The usual motive behind organizing a conference like this is to provide the opportunity for the researchers of dyadic analysis to exchange ideas, to collaborate with each other, to deepen personal connections, and to present their latest results and the problems.

In addition to these general motives there is a very special reason for having the conference been organized in this year. Namely, one of the leading researchers of dyadic analysis, Professor William Wade, turns 60 this year. His scientific achievements and his wide activity in dyadic analysis have had significant effect on the continuous progress in this field. It would be hopeless for me to give a thorough review on his activities as a researcher, educator and organizer. In my laudation I would like to share my impressions developed during our collaboration about him as a human being and a researcher. A significant part of his scientific activities is connected with unicity. This will, I presume, be mentioned in the laudation by professor Skvortsov. Professor Wade has had wide international connections not restricted to Russia and Hungary. We will learn about his fruitful cooperation with Japanese colleagues from Professor Yoneda.

William R. Wade was born in Los Angeles, California on October 28, 1943. He started elementary school in East Los Angeles, Montebello, Pio-Rivera and finished his high school studies in the local school in La Puente in 1961. It was the time when the launch of the first Soviet sputnik shocked the people of the United States. The responsible leaders of education in the USA became aware that the good quality of the high school education in the Soviet Union had a major role in the success of the soviet scientists. After recognizing it they organized special classes in mathematics and natural sciences for talented students throughout the country. Professor Wade was one among these talented students. Due to his teachers there he came to like mathematics. In 1961 he started his university studies in the University of California, Riverside, where earned his B.Sc. and M.Sc. degrees. He made his Ph.D. thesis under the supervision of Professor L. Shapiro at UC Riverside. The themes of his dissertation, dyadic analysis and unicity problems of Fourier series, remained the central part his research interest. This area has had old traditions in Europe, and was transmitted to the USA by A. Zygmund. In connection with this field we should mention the outstanding mathematical school of Mensov in Moscow. Shapiro, as a student of Zygmund, had started to study unicity problems focusing on Haar and Walsh series. Professor Wade's first results are connected with Shapiro's work.

Wade has published 58 papers so far. Most of them are about Walsh, Haar and Vilenkin series. Especially about uniqueness, the order of $(C, 1)$ means and the dyadic derivative. His comprehensive papers about dyadic analysis influenced the orientation of all of us in this area, and deserve special recognition. These papers contained much more than the results achieved by western mathematicians. Due to his proficiency in Russian he gave objective and detailed information about the Russian-Soviet results as well, thus bridging the gap between the two worlds.

He has developed lively cooperation with colleagues from many countries including India, Russia, Japan and Germany. In particular, the history of our collaboration goes back two decades. The fact that he coauthored many papers shows his willingness, patience and talent for cooperation. Among his coauthors are G.E. Albert, D. Harris, G.E. Lippmann, S. Perrin and C. Powell from the USA, J. Tateoka, K. Yoneda from Japan, V.A. Skvortsov from Russia and S. Fridli, F. Móricz, J. Pál, F. Schipp and P. Simon from Hungary. It must be a special joy for him to have a joint paper with his son Peter, who works as a mathematics teacher and so continues the family tradition in mathematics.

Professor Wade has been working at the Mathematics Department of the University of Tennessee since 1968, as full professor since 1978. He started service as deputy chair in 1994. Besides his position at the university he worked as a scientific consultant for the Oak Ridge National Laboratory and for the Gaseous Diffusion Plant.

As a teacher he is interested in the history and education of mathematics. University education takes high priority in his career. He always put emphasis on the clear and rigorous presentation of even the most complicated concepts and theorems with showing analogies and applications. These are the principles that characterize his outstanding book "Introduction to Analysis" which became popular in many US universities. Here I would like to mention that his wife, Cherry Wade is a teacher herself and has been a big help to him especially in building up the pedagogical structure of this book. Besides his regular teaching duties Professor Wade was very successful in post graduate education. Six students have earned their PhD degrees under his guidance.

Please let me reveal more details about our collaboration and about the two books resulting from it. The idea goes back to 1976 when the secretary of industry of Hungary visited Knoxville. Then the secretary wanted to strengthen the cooperation of the two countries and Professor Wade initiated a cooperation in the field of dyadic analysis. We started to work together at first with the support of the NSF for one year. This provided the possibility for establishing a long term connection. The writing of a comprehensive monograph on Walsh series has become the center of our collaboration. Our plans were approved by both the NSF and the MTA. The grants awarded by them for two periods 1984-87, 1987-91 helped us for instance in the travel and typing costs. Professor Wade's contribution to the monograph had several important sides. Namely, we had one of the best experts of unicity problems among the authors. Also, the sections written by Hungarian authors in poor English have been carefully rewritten and styled by him. In addition to these Professor Wade with his wide knowledge and precision was a great help in assembling the historical notes and comments. Finally, I would like to remind the audience that in that time the technical part of writing was made by typewriters. It happened more then once that after finishing a chapter we realized that the others should be changed. As a result one chapter was rewritten 3 or even 4 times until it had its final form. I must admit that sometimes we challenged his patience. By the time we were about to finish the book in 1989 the typesetting system called TEX has come out. In that summer Professor Wade learned how to use the TEX system and he himself with the help of his son Peter, retyped the whole 600 page long manuscript and so provided the camera ready version to the publishers Adam Hilger, Bristol and Akadémiai Kiadó, Budapest. I cannot say that the publishers appreciated the enormous work. The honorary given for the book was symbolic only. On the other side, several positive reviews have been written about this book worldwide and it received a High Quality Award by the Akadémiai Kiadó.

Starting from the early 90's we have witnessed the rapid progress in the research and applications of wavelets. These constructions rely on the methods of classical harmonic analysis. It is plausible to develop a dyadic wavelet theory by taking the Fourier transform on the dyadic or the 2-adic field instead of the classical trigonometric Fourier series. This idea motivated us to write our second joint monograph "Transforms and Normed Fields" appearing in 1995. We have laid down the foundations for investigating the most important properties of the Fourier, Zak, Voice etc. transforms related to the additive and multiplicative groups of these fields. I am convinced that the Fourier transform of the 2-adic field can be applied for the constructions of wavelets giving a new light to the existing complicated constructions.

The Christian faith plays a prominent role in the life of Professor Wade. His belief was truly shown in the interview that was made during his visit in 1985. This interview titled as "Belief, Music and Mathematics" was published in a high quality Hungarian magazine for popularization of scientific knowledge called "Természet Világa" (The World of Nature). It did not happen very often in those days that issues about religious belief received such wide publicity. Maybe that is why it created a wide reaction. I have been called by several people who told me that their relation to belief is similar to that expressed by Professor Wade in his interview. Later, in 1990 another book was published by the same journalist who interviewed William Wade. This book contains a series of interviews with mathematicians including L. Carleson, Paul Erdős, Béla Szőkefalvy Nagy, and Benoit Mandelbrot, and at last but not least William R. Wade.

Professor Wade not only loves classical music but he, his wife, and two sons play music as well. Another hobby of his is making photos of artistic quality. Throughout the world he made excellent photos of the landmarks of the countries he visited.

Dear Professor Wade. In the name of the Organizing Committee, the Department of Numerical Analysis at the Eötvös Loránd University, and the Mathematics Department of the University of Pécs I express my best wishes on the occasion of your 60th birthday. I wish you good health, more success in science and in the education of young people. I hope that our connection will remain a living one for a long time and that we will be able to solve the problems ahead of us. God bless you.

Balatonszemes, June 11, 2003.