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INTRODUCTION TO THE FESTSCHRIFT FOR ROBERT C. WAAG

I am pleased and honored to write this introduction for my colleague and friend, Robert C. Waag. Our careers have paralleled, overlapped, and intersected in various ways over the years. Our relationship goes back to before we even knew each other, having both been born in Pennsylvania (Bob 2 years my elder) and having both attended Cornell University in the Electrical Engineering Department, with Bob receiving his MS degree at the same commencement ceremony where I received a BEE degree. Bob went on to complete a doctoral program there, majoring in communiations Jh(i)0(i)th/ &(d)0(h)2 arrived there as an assistant professor, the same year that I received my MS degree. During my first two years at Rochester, I found an entrance into medically related research working under Professors Ed Carstensen and Ray Gramiak in the field of sonography. After my graduation with a PhD, my academic career continued for decades at Yale University and Wake Forest University, while Bob's academic career continued at Rochester with a joint appointment in the Departflux density measurements and a commendation medal for contributions in experimental evaluation of data transmission techniques. Subsequently, Bob received honors from the Radiological Society of North America, National Institutes of Health, National Heart and Lung Institute, World Federation for Ultrasound in Medicine & Biology, Alexander von Humboldt Foundation, Ruhr-Universität Bochum in Germany, University of Paris, Tokyo Institute of Technology, the American Institute of Ultrasound in Medicine, Japan Society of Ultrasonics in Medicine, Ecole Supérieure de Physique et de Chemie Industrielles de la Ville de Paris, Éta Kappa Nu, Tau Beta Pi, Phi Kappa Phi, and Sigma Xi. He has held leadership positions in the American Institute of Ultrasound in Medicine and the Institute of Electrical and Electronics Engineers, has served on the editorial , Jboards of the J . C. . . A . U. . U. MeA, J . U. M eA В. _, and A.E IEEE T В. , and holds two US A. patents. He co-edited in 1975, with Ray Gramiak, one of the earliest textbooks in the ultrasound field, C AU . As you would expect, he has produced countless publications, presented many lectures at various meetings, collaborated with several professionals in the field, and guided numerous students.



logical tissues. His 1980s papers on scattering convincingly defined the correlation lengths, K-space signatures, and relative effects of density and compressibility and of scattering in tissues. Similarly, in the areas of wave propagation and aberration correction, ultrasound imaging suffers from the degrading effects of heterogeneous tissue. His clever approach was to take MRI images of human tissue and segment them. The different tissue types were assigned realistic acoustic parameters, and these were fed into forward-propagating

models. His movies of wave propagation in these tissues are the most realistic and most illuminating depictions that have ever been produced. When you couple these results with his rigorous mathematical framework for aberration correction and inverse solutions to the imaging problem, the overall accomplishment is without peer. Together, these are truly a "magnum opus" of research, all leading to greatly improved imaging and vastly improved understanding. These singular contributions are worthy of the recognition given to Professor Waag in this Festschrift dedicated to him.

$$FREDERICK W. KREMKAU
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