



D. J. Schoenberg

1903-1990

In Memoriam

I. J. Schoenberg

(1903-1990)

I. J. Schoenberg, the "father of splines," died on February 21, 1990.

Iso Schoenberg was born in Galatz, Romania, on April 21, 1903. He studied mathematics at the University of Jassy, in Berlin and Göttingen and, influenced by Issai Schur, wrote a thesis on Analytic Number Theory.

During his visit to the Hebrew University of Jerusalem in 1928, arranged by Edmund Landau, Schoenberg became interested in estimating the number of real zeros of a polynomial and so began his very influential work on Total Positivity and Variation Diminishing linear transformations, whose many echoes can be traced, e.g., in Karlin's book on Total Positivity. He also became interested in Landau's daughter, Charlotte (Dolli), whom he married in Berlin in 1930. A Rockefeller fellowship took him to the United States, to the University of Chicago, in 1930, and in 1933 he became a Fellow of the newly founded Princeton Institute for Advanced Studies. It was there that he started his fundamental work on distance geometry, i.e., the isometric imbedding of metric spaces into Hilbert space and positive definite functions.

Schoenberg joined the faculty of the University of Pennsylvania in 1941. During the war years, he worked at the Army's Ballistic Research Lab (in Aberdeen, Maryland), and there did his best-known work, the development of splines. His first paper on the topic became the foundation of what is now called Cardinal Spline Theory, beautifully summarized many years later in his SIAM monograph.

For the next 15 years, Schoenberg had splines all to himself. This changed around 1960, when computers became more widespread and splines first assumed their role as the premier tool for data fitting and computer-aided geometric design. Schoenberg's more than 40 papers on splines after 1960 gave much impetus to the rapid development of the field. Most of these are part of Schoenberg's prolific output as a member of the Mathematics Research Center of the University of Wisconsin-Madison, which he joined in 1964.

Of his 174 published papers and books, 56 appeared after his retirement in 1973. This includes his delightful *Mathematical Time Exposures*, the result of a seminar he gave at West Point, and published in 1982 by the Mathematical Association of America.

Volume 8 of *Journal of Approximation Theory* was dedicated to Schoenberg on the occasion of his 70th birthday. Samuel Karlin's article in the first issue of that volume provides an appreciation of Schoenberg's remarkable mathematical output, some of which can be found in Schoenberg's *Selected Papers*, Volumes 1 and 2 (Carl de Boor, Ed., Birkhäuser, Boston, 1988), along with an article by Schoenberg on his life and work.

Schoenberg was on the editorial board of *Journal of Approximation Theory* from the beginning. He will be missed by his many friends, and the much larger group that benefits from his work.

R. ASKEY
C. DE BOOR
Madison, Wisconsin