

## MEMORIAL RESOLUTION

### KAREL deLEEuw (1930 – 1978)

In the tragic death on August 18, 1978, at age 48, of Professor Karel deLeeuw, Stanford University and its Department of Mathematics lost a distinguished and vibrant faculty member and friend.

Karel deLeeuw was born in Chicago, Illinois, on February 20, 1930. He was educated in the public schools of Chicago through high school. He then attended the Illinois Institute of Technology (1947-49) and the University of Chicago, where he received the B.S. degree in 1950. During his undergraduate years his interests shifted from engineering and physics to mathematics. He received the M.S. degree in mathematics from the University of Chicago in 1951; he then went to Princeton University, where he received the Ph.D degree in Mathematics in 1954. He held scholarships at both Illinois Institute of Technology and the University of Chicago, and an Atomic Energy Commission Fellowship at Princeton University. His teaching career began at Dartmouth College, where he was Instructor in Mathematics 1953-55. He then moved to the University of Wisconsin, where he was Research Instructor in Mathematics from 1955 to 1957. He came to Stanford University as Assistant Professor of Mathematics in 1957, and he was promoted to Associate Professor in 1960 and to Professor in 1966. During various sabbatical and other leaves he was a member of The Institute for Advanced Study at Princeton, Fulbright Fellow and Overseas Fellow at Churchill College, Cambridge University, and the recipient of a Tenured Faculty Development Award at Stanford, 1976-77, an award that freed him to study in the Department of Psychology at Stanford.

Professor deLeeuw contributed much time and energy in service to the University and the mathematics community. He was Member-at-Large of the Council of the American Mathematical Society; at Stanford, he was a member of the Dean's Advisory Committee on Seminars for Entering Students, a University Advisor for undergraduate students, and, in the Department of Mathematics, a graduate advisor, chairman of the Graduate Study Committee, member of the Undergraduate Curriculum Committee, chairman of the Teaching Committee, and for several years Associate Executive Head of the Department.

Professor deLeeuw's research in pure mathematics was mostly concentrated in the areas of abstract harmonic analysis and functional analysis. He was quite prolific and produced many research papers, as well as a text book in Calculus. His work was characterized by a remarkable ability to ask penetrating and novel questions and to resolve them in an elegant manner. One of his earlier papers, with W. Rudin, on the extreme points of  $H^1$ , was a classic example of a surprising use of complex functions theory to answer a question which naturally arises in functional analysis. His paper on  $L_p$  multipliers contains several often-quoted results and is particularly noted for its elegance. His papers show an impressive blend of ideas deriving from function algebras, harmonic analysis, operator theory, and complex function theory. When he ventured into fields that were new to him, he always brought a point of view that was uniquely his own: his work on algebras of differentiable functions, for example, brought a functional analytic point of view to the field of partial differential operators. His most recent work, completed in the past year with Y. Katznelson and J. P. Kahane, was a strikingly beautiful result

which completely resolves the question of the rapidity with which the coefficients of the Fourier series of a continuous function may tend to zero.

DeLeeuw was passionately concerned with the human aspect of his work. He was an outstanding teacher, able to present subjects at all levels with extraordinary lucidity and enthusiasm. He had many research students, and his relationship with them was of the warmest and most understanding nature. He brought out the best in them. Several have gone on to become well known and highly respected mathematicians; but perhaps his greatest joy was in working with students to see those succeed who initially were somewhat uncertain of their abilities to do research. He was held in the highest affection by his students, and no one who attended his lectures could ever forget the warmth and humor he could bring to almost any topic. His interest in mathematical education deepened through his years at Stanford. He constantly brought innovation to his classes, striving to replace boredom with enthusiasm, trauma with pleasure, rote learning with understanding. Over the past five years he had been developing a course for students with very weak mathematical backgrounds. It involves a very flexible self-paced tutorial framework into which can be fitted any material or technique that is helpful. This led Karel into wide ranging studies in the psychology and biology of learning. Bringing these ideas back to his course, he constantly modified it, not seeking the perfect course, but rather a sufficient body of options to fit the varying students he faced. His commitment to teaching included efforts to improve the whole level of teaching in the Department of Mathematics. He wrote a substantial report, analyzing teaching problems and suggesting methods for overcoming them. For over ten years he devoted time to teaching the art of teaching to graduate students.

Karel served as advisor to freshmen, entering graduate students, and undergraduate majors in the Department, often in the same year, as well as to his doctoral dissertation students. Many students who were not his advisees sought and received his friendly and wise counsel. He was an energetic participant in departmental discussions of student affairs, often expressing novel points of view. He presented his own views vigorously, but just as vigorously entertained those of others. Once his children were grown, he brought graduate students to live in his home, to fill it with an atmosphere of excitement and learning. His door and his mind were always open, and his presence alone demanded the same openness and willingness to explore in those he encountered – undergraduates, graduate students, and colleagues alike.

Professor deLeeuw is survived by his wife, Sita; his daughters Elizabeth (Mrs. Milton Mendes) and Rebekah; his son, Eric; his parents, Mr. and Mrs. Philip deLeeuw; and his brother, Mark deLeeuw. We extend to them our deepest sympathy and our appreciation for their sharing Karel with us.

We shall cherish the memory of this fine productive scholar, inspiring teacher, and kind and sparkling friend.

Robert Osserman, Chairman  
Harold M. Bacon  
Paul W. Berg  
Paul J. Cohen  
Daniel J. Rudolph