
Awards for Distinguished Scientific
Contributions: 1987

Saul Sternberg

Citation

“For his uniquely powerful, creative, and elegant research on human information processing. He has contributed immensely influential experimental procedures, analytical techniques, and theoretical models. These include the Sternberg memory-scanning paradigm, the additive-factor method for analyzing reaction-time data, and the serial exhaustive search model. Their impact has fostered a revolution in the study of perception, memory, attention, and motor control, while setting new standards of scientific rigor. Publications of his work have also exhibited a clarity of style and grace seldom, if ever, achieved by other authors. The field has likewise benefitted greatly from his dedicated service on the boards of numerous professional societies and journals.”

Biography

Saul Sternberg was born in 1933 in New York City, where he spent his first 17 years. His parents, children of immigrants, worked in New York's public school system, his father as a high school teacher of English and a school principal. They were interested primarily in language, literature, and social issues.

Saul's scientific interests emerged at age 10, when he found a physics text in the public library; during the

next few years he spent much of his spare time building electronic devices. At 11, he began to idolize and identify with his theoretical physicist cousin, H. Primakoff. Another relative who encouraged him in those years was Mildred Cohn, a biochemist.

He also loved to play the piano and violin. Because it seemed so clear that he would become a scientist, his parents encouraged Saul to attend the High School of Music and Art, where he could cultivate these secondary interests. A salient part of those years was writing for the school paper, especially on social and educational issues. At 16, he started work on a project in nuclear physics suggested by his cousin. Gathering information from physics journals in the public library, working out the theory, and making the measurements (on particle tracks in photographic emulsions) was an exciting intellectual adventure. The project helped him win first prize in the Westinghouse Science Talent Search in 1950.

Partly because of its excellence in physics, Sternberg attended Swarthmore College. A summer research job at Brookhaven National Laboratory diminished the romance of physics; a course in algebra with A. Dresden made mathematics attractive. Seeking greater breadth, he spent his third year at the University College of North Staffordshire, concentrating in mathematics (under I. N. Sneddon), but also participating in an experimental general education program.

Perspective from the year abroad fostered a desire to do something of social value. On leaving Swarthmore in 1954, Sternberg decided to move into the social sciences, where he hoped to apply his mathematical training. He became a sociology student in Harvard's Department of Social Relations during a period of optimism about integration of the behavioral sciences. He then moved from sociology into social psychology and small-group research and then into research on learning. During this transition, he was influenced by J. S. Bruner, R. L. Solomon, T. K. Landauer (a fellow graduate student), and N. H. Anderson (then at Yale); by S. S. Stevens and G. A. Miller, whose seminars in the Psychology Department he attended; and by R. R. Bush and F. Mosteller (whose *Stochastic Models for Learning* had just appeared), under whom he began learning-models research. He joined enthusiastically in their project with R. D. Luce and E. Galanter, excited by the prospect of developing models that would precisely characterize effects of individual trials. After Bush left Harvard, Luce supervised his dissertation research on "A Path-Dependent Stochastic Model of Human Choice Learning." This experience impressed Sternberg with the importance of ensuring rigor by discriminating among several competing models, rather than testing just one, and of testing a model's assumptions in isolation.

Persuaded of the importance of quantitative methods and models, Sternberg spent a postdoctoral year at the University of Cambridge, taking a degree in mathematical statistics, before joining the Psychology Department at the University of Pennsylvania, which was undergoing a revolution under Bush, his former mentor. There, he was



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in the mathematical psychology group, with Luce (now also at Penn) and Galanter. Influenced partly by Broadbent's *Perception and Communication*, Sternberg's interests shifted from learning to human information processing during his initial years at Penn. Colleagues such as J. Nachmias and R. Teghtsoonian helped him learn how to experiment with humans; U. Neisser's findings about visual search for multiple targets stimulated his use of reaction times to investigate memory retrieval.

In 1964, Sternberg was lured to the rich environment for psychological research fostered by M. V. Mathews, J. R. Pierce, and W. O. Baker at Bell Telephone Laboratories, as a member of R. N. Shepard's department. In 1969, he was joined by R. L. Knoll, with whom he has continued a fruitful collaboration until now. As head of the Human Information-Processing Research Department (1970-1985), he brought a brilliant group of colleagues to Bell, including J. C. Johnston, D. H. Krantz, T. K. Landauer, D. E. Meyer, D. A. Rosenbaum, Marilyn L. Shaw, and A. M. Wing, as well as extraordinarily talented junior collaborators whose development he fostered (such as Knoll, S. Monsell, D. L. Turock, and C. E. Wright) and numerous short-term visitors. Sternberg derived great satisfaction from this focused, mutually sup-

portive, and highly interactive group. Topics of his research included the control of movement sequences, short-term dynamics of visual memory, perception of duration and temporal order, time production, memory search and visual search, reaction-time methods, and information-processing models.

In 1985, after Bell Laboratories decided to decimate its outstanding research group in psychology, Sternberg returned to the Psychology Department at the University of Pennsylvania, attracted by its breadth and brilliance.

Sternberg's most rewarding society activities have been his contributions to the International Association for the Study of Attention and Performance, which he helped to found and govern during the decade starting in 1975.

Sternberg has held several fellowships and has been the Sir Frederic Bartlett Lecturer of the Experimental Psychology Society, London, and a Regents Professor at the University of California, Berkeley. He was elected to the Society of Experimental Psychologists in 1971 and the National Academy of Sciences in 1982.

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