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Dedicated to Our Colleague and Friend Michael Machtey

Michael Machtey was a member of the Program Committee of the Twentieth Annual Symposium on the Foundations of Computer Science at which most of the papers in this Special Issue were presented. He would have chaired one of the sessions but for his unexpected death a few days before the start of the symposium. The editors were mindful of Machtey's interests and tastes in selecting papers for this Special Issue. It seems particularly appropriate to dedicate the issue to him and his work.

Machtey was born on May 11, 1944, in New York City. He was a scholarship student at Reed College, where he received a B. A. in Mathematics in 1965 after three years' study. At Reed he was a student of his future colleague Paul Young, who had himself recently completed Doctoral studies in Recursion Theory at MIT. Machtey's outstanding mathematical ability was widely recognized at Reed, and following graduation he started graduate studies in Mathematics at the Massachusetts Institute of Technology, receiving his Ph.D. in 1969 for a dissertation on Higher Recursion Theory supervised by Gerald Sacks. He then joined the faculty of Mathematics and Computer Science at Indiana University. In 1972 he moved to the faculty of Mathematics and Computer Science at Purdue University.

Machtey's research in Computer Science focused on Complexity Theory. A major theme of his papers was the structure of complexity classes [3, 4, 6–8, 11], paralleling a similar theme on the structure of degrees of unsolvability in his papers on generalized recursion theory [1, 2, 5]. A measure of the technical virtuosity he brought to this subject is suggested in the comment by an admiring referee describing the referee's "mixed feelings seeing one's [own] meat cleaver replaced by [Machtey's] scalpel."

The editors of the Special Issue were pleased to be able to obtain two of the papers on which Machtey was working at the time of his death [11, 12]. These papers strive to explain the applicability and limits of the basic proof methods of complexity and recursion theory, namely, diagonalization and self-reference. (Paper [12] appears in this issue; because of a scheduling oversight [11] was already published in the preceding issue of this Journal.)

As with his professional work, Machtey's personal activities were marked by determined excellence. He was a fine amateur photographer, stereo buff, and self-taught woodworker who built most of his own furniture. He was an impressive folk dancer who had toured Roumania studying his favorite Balkan and Macedonian dances, which he later taught informally at Purdue.

He took greatest pride in his work on ceramic pottery. First inspired by his wife

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Barbara, he took a pottery class in 1971 at Indiana University, and continued to make and study pots when he later moved to Purdue. He was challenged by the technical problems involved in managing crystalline glaze and brought his Computer Science expertise to bear in designing a microprocessor-controlled kiln able to maintain the critical temperature curves required for crystal formation [10]. He was the first potter to be able to control the placement of crystals, and his distinctive work was shown at the Indianapolis Museum of Art, at Purdue, and at The Gallery in Bloomington.

Despite his many accomplishments, Machtey suffered recurrent periods of despondency, leading ultimately to death by his own hand on October 27, 1979. He leaves behind a ten-year-old daughter Sara, a companion of many years Marge Levy, a sister Benita Schwartz, his parents Ethel and Nathan, and a circle of friends and colleagues who will continue to remember his wry wit and to admire his lucid brilliance.

Contributions to the *Michael Machtey Scholarship Fund* may be sent c/o Professor Paul Young, Computer Sciences and Mathematics Departments, Purdue University, Lafayette, Indiana 47907.

ALBERT R. MEYER

Cambridge, Massachusetts
June, 1981

PUBLICATIONS OF MICHAEL MACHTEY

Book

"An Introduction to the General Theory of Algorithms," North-Holland, Amsterdam, 1978. With Paul Young.

Journal Articles

1. Admissible ordinals and intrinsic consistency, *J. Symbolic Logic* **35** (1970), 389–400.
2. Admissible ordinals and lattices of α-r.e. sets, *Ann. Math. Logic* **2** (1971), 379–417.
3. Augmented loop languages and classes of computable functions, *J. Comput. System Sc.* **6** (1972), 603–624.
5. Minimal degrees in generalized recursion theory, *Z. Math. Logik Grundlagen Math.* **20** (1974), 133–148.
6. On the density of honest subrecursive classes, *J. Comput. System Sci.* **10** (1975), 183–199.
7. Helping and the meet of pairs of honest subrecursive classes, *Inform. and Control* **28**(1975), 76–89.
8. Minimal pairs of polyomial degrees with subexponential complexity, *Theoret. Comput. Sci.* **2** (1976), 73–76.

9. Simple Godel numberings, isomorphisms, and programming properties, *SIAM J. Comput.* **7** (1978), 39–60. With Paul Young and Karl Winklmann.
10. Crystalline glazes, *Ceramic Rev.* **49** (1978), 16–19.
11. A note on structure and looking back applied to the complexity of computable functions, *J. Comput. System Sci.* **22** (1981), 53–59. With Paul Chew.
12. Remarks on recursion vs. diagonalization and exponentially difficult problems, *this Special Issue* (1981). With Paul Young.