Book Reviews

Models of My Life

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Models of My Life, Herbert A. Simon, Alfred P. Sloan Foundation Series, Basic Books, New York, 1991, 415 pp., $26.95, ISBN 0-465-04640-1.

Is reading Herb Simon's delightful autobiography worth boarding the wrong commuter train? It was for me. Written in an informal style, *Models of My Life* presents a lively and insightful self-portrait of this father of AI. In keeping with his character, Simon uses the metaphor of the maze to describe his life: "In describing my life as mazelike, I do not mean that I have made a large number of deliberate, wrenching decisions to go off in one direction or another. On the contrary, I have made very few. Obvious responses to opportunities and circumstances, rather than studied decisions, have put me on the particular roads I have followed" (pp. xvii–xviii). With typical humor, he suggests that the reader, "looking for dangerous adventures, or minotaurs, or the heroism of a Theseus" (p. xviii), consider another book.

Simon identifies four themes in his life, each with its attendant maze: (1) scientist and teacher, including his careers as political scientist, organization theorist, economist, management scientist, computer scientist, cognitive psychologist, and philosopher of science; (2) private person; (3) "university politician, seeking to build and shape the environment for his scientific work"; and (4) "science politician, concerned with the health of social science, with science as adviser to the polis" (p. xviii). These themes and mazes are divided into a "four-panel triptych," covering his life to the present: Journey to a Twenty-First Birthday, The Scientist as a Young Man, View from the Mountain, and Research after Sixty. Each panel presents the reader with such colorful anecdotes as the following, which comes from the first panel:

> "Then there was the strawberry patch episode, which also seems to belong to Washington Island. Whether during his fourth summer or on some later occasion, the boy was among a party picking wild strawberries. The others filled their pails in a few minutes; there were only a few strawberries in the bottom of his. How could the others see the berries so easily amid the closely matching leaves? That was how he learned that strawberries are red and leaves green, and that he was color-blind" (p. 5).

The stirrings of technical interests and the application of mathematics to the study of administrative behavior are taken up in later chapters that deal with his life as a student and graduate student at the University of Chicago. He set out to major in economics but switched to political science to avoid taking an accounting course requirement. At that time, Charles E. Merriman and the Political Science Department were at "the vanguard of the behavioralism that erupted in political science." Simon became a participant in this "scientific revolution." Participation shaped his views about the development of scientific disciplines and taught him the strategies he "later employed in attacking orthodoxy in economics and psychology" and focused his "sights on the phenomena of human thinking and problem solving as the essential core of both organizational theory and economics."

Outside the Political Science Department, Simon fell under the influence of philosopher Rudolf Carnap and mathematician Henry Schultz. A paper written for Carnap was the genesis for what was to become "Administrative Behavior." From a paper written for Schultz, he learned "that in empirical science the final test is not mathematical elegance or a priori plausibility, but the match between theory and data."

Extracurricular activities included attendance at guest lectures such as one given by Alfred North Whitehead: "I repaired to Mandel Hall, the first row of the balcony, to hear his public lecture. I listened intently for an hour, and didn't understand a word."

The Second Panel: The Scientist as a Young Man takes up Simon's life after the University of Chicago and covers his research for the International City Managers' Association, which introduced him to IBM punched card equipment and programming (rewiring). This research experience convinced him of the need for an administrative theory based on observation and experimentation rather than common sense. This belief led him to write his classic "Administrative Behavior" for his doctoral dissertation, in which he introduced the concepts of bounded rationality and satisficing behavior. It also set his research agenda for more than 20 years. Early teaching experiences at the Illinois Institute of Technology and later contributions to the founding of Carnegie-Mellon's Graduate School of Industrial Administration are also included in this panel.

Cybernetics, early work in machine intelligence, and his own work with Allen Newell and Cliff Shaw on the LOGIC THEORIST are also described in this second panel. In this and later work, they sought to simulate human problem solving and not simply to demonstrate "how computers could solve hard problems." Unlike D. O. Hebb, Edwin G. Boring, and later reductionists, Newell and Simon rejected the notion that "the explanatory mechanisms" of behavior had "to be neurological, ... not because of in-principle opposition to reductionism but because we believed that complex behavior can only be reduced to neural processes in successive steps, not in a single leap."

Subsequent chapters survey Newell and Simon's work for the RAND Corporation and the Dartmouth Conference (June 1956) as well as his work on the GENERAL PROBLEM SOLVER. Readers cannot help but be impressed by how much the story of Herb Simon is the history of AI. However, there is

more to his life, much more, as suggested by these selected chapter headings: "Building a Business School: The Graduate School of Industrial Administration," "Research and Science in Politics," "Creating a University Environment for Cognitive Science and A.I.," "The Scientist as Politician," "Foreign Adventures," "From Nobel to Now," "The Amateur Diplomat in China and the Soviet Union," and "Guides for Choice."

In The Fourth Panel: Research after Sixty, Simon turns inward and reflects on his philosophy of life. Guided by over 50 years of research in decision making, he ultimately describes himself as a maze runner, "a creature of bounded rationality using heuristic search to find satisficing—'good enough'—courses of action."

Readers interested in Herb Simon and the origins of AI will want to read this book, even if it means occasionally taking the wrong train.

Books Received

The following books were received by press time:

■ Abrahams, Paul, and Larson, Bruce. *UNIX for the Impatient.* Reading, Mass.: Addison-Wesley Publishing, 1992. 559 pp. ISBN 0-201-55703-7.

■ Alshawi, Hiyan, ed. *The Core Language Engine.* Cambridge, Mass.: The MIT Press, 1992. 322 pp. ISBN 0-262-01126-3

■ Anthony, M., and Biggs, N. *Computational Learning Theory.* New York: Cambridge University Press, 1992. 155 pp. ISBN 0-521-41603-5.

■ Anzai, Y. *Pattern Recognition and Machine Learning.* Boston: Academic Press, 1992. 407 pp. ISBN 0-12-058830-7.

■ Balaban, Mira; Ebcioglu, Kemal; and Laske, Otto. *Understanding Music with AI: Perspectives on Music Cognition.* Menlo Park, Calif; AAAI Press, 1992. 512 pp. ISBN 0-262-52170-9.

■ Beynon–Davies, P. *Expert Database Systems: A Gentle Introduction.* New York: McGraw-Hill, 1992. 186 pp. ISBN 0-07-707240-3.

■ Birmingham, William P.; Gupta, Anurag P.; and Siewiorek, Daniel P. *Automating the Design of Computer Systems: The MICON Project.* Boston, Mass.: Jones and Bartlett Publishers, 1992. ISBN 0-86720-241-6.

■ Blum, Bruce I. *Software Engineering: A Holistic View.* New York: Oxford University Press, 1992. 588 pp. $49.95. ISBN 0-19-507159-X.

■ Butler, Christopher S., ed. *Computers and Written Texts.* Cambridge, Mass.: Basil Blackwell, 1992. 306 pp. ISBN 0-631-16381-6.

■ Bradfield, Julian Charles. *Verifying Temporal Properties of Systems.* Secaucus, N.J.: Birkhäuser Boston, 1992. 113 pp. $49.50. ISBN 0-8176-3625-0.

■ Churchland, Patricia S., and Sejnowski, Terrence J. *The Computational Brain.* Cambridge, Mass.: Bradford Books, 1992. 544 pp. $39.95. ISBN 0-262-03188-4.

■ Desain, Peter, and Honing, Henkjain. *Music, Mind, and Machine: Studies in Computer Music, Music Cognition, and Artificial Intelligence.* Amsterdam: Thesis Publishers, 1992. ISBN 90-5170-149-7.

■ Dinsmore, John. *The Symbolic and Connectionist Paradigms: Closing the Gap.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1992. 300 pp. ISBN 0-8058-1080-3.

■ Duranti, Alessandro; and Goodwin, Charles. *Rethinking Context: Language as an Interactive Phenomenon.* Cambridge: Cambridge University Press, 1992. 363 pp. ISBN 0-521-38169-X.

■ Farr, Marshall J., and Psotka, Joseph. *Intelligent Instruction by Computer: Theory and Practice.* Washington, D.C.: Taylor & Francis, 1992. ISBN 0-8448-1687-6.

■ Gärdenford, Peter. *Belief Revision.* New York: Cambridge University Press, 1992. 277 pages. ISBN 0 521-412609.

■ Gardin, Jean-Claude, and Peebles, Christopher. *Representations in Archaeology.* Bloomington, Indiana: Indiana University Press, 1992. 394 pp. ISBN 0-253-20709-6.

■ Gray, Peter. *Object-Oriented Databases: A Semantic Data Model Approach.* Hertfordshire, England: Prentice-Hall, 1992. 237 pp. $37.95. ISBN 0-13-630203-3.

■ Hinrichs, Thomas R. *Problem Solving in Open Worlds: A Case Study in Design.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1992. 228 pp. ISBN 0-8058-1228-8.

■ Hoffman, Robert R. *The Psychology of Expertise: Cognitive Research and Empirical AI.* New York: Springer-Verlag, 1992. 395 pp. ISBN 0-387-97686-8.

■ Holland, John H. *Adaptation in Natural and Artificial Systems: An Introductory Analysis with Applications to Biology, Control, and Artificial Intelligence.* Cambridge, Mass.: Bradford Books, 1992. 211 pp. $14.95. ISBN 0-262-58111-6 (paper). $30.00. ISBN 0-262-08213-6 (cloth).

■ Jubak, Jim. *In the Image of the Brain: Breaking the Barrier between the Human Mind and Intelligent Machines.* New York: Little, Brown and Company, 1992. 348 pp. $24.95. ISBN 0-316-47555-6.

■ Khatib, Oussama; Craig, John J.; and Lozano-Pérez, Tomás. *The Robotics Review 2.* Cambridge, Mass.: The MIT Press, 1992. 372 pp. ISBN 0-262-11171-3.

■ Koslow, Arnold. *A Structuralist Theory of Logic.* New York: Cambridge University Press, 1992. 418 pp. $69.50 (cloth). ISBN 0-521-41267-6.

■ Leigh, J. R. *Control Theory: A Guided Tour.* London: Petel Peregrinus Ltd., 1992. 180 pp. ISBN 0-86341-241-6.

■ Leake, David B. *Evaluating Explanations.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1992. 260 pp. $94.95. ISBN 0-8058-1064-1.

■ Leyton, Michael. *Symmetry, Causality, Mind.* Cambridge, Mass.: The MIT Press, 1992. 630 pp. ISBN 0-262-12163-8.

■ Lozano-Pérez, Tomás; Jonas, Joseph L.; Mazer, Emmanuel; and O'Donnell, Patrick A. *HANDLEY: A Robot Task Planner.* Cambridge, Mass.: The MIT Press, 1992. 227 pp. ISBN 0-262-12172-7.

■ McKenna, Thomas; Davis, Joel; and Zornetzer, Steven, eds. *Single Neuron Computation.* San Diego, Calif.: Academic Press, 1992. 644 pp. $55.00. ISBN 0-12-484815-X.

■ Pearson, Jamie Parker, ed. *Digital at Work: Snapshots from the First Thirty-Five Years.* Burlington, Mass.: Digital Press, 1992. 212 pp. $19.95. ISBN 0-13-213489-6.

■ Rogers, Yvonne; Rutherford, Andrew; and Bibby, Peter A., eds. *Models in the Mind: Theory, Perspective, and Application.* London: Academic Press, 1992. ISBN 0-12-592970-6.

■ Sleeman, D.; and Bernsen, N. *Research Directions in Cognitive Science: European Perspectives. Volume 5.* Hillsdale, N.J.: Lawrence Erlbaum Associates, Inc., 1992. 339 pp. ISBN 0-86377-176-9.

- Snyder, Wayne. *A Proof Theory for General Unification*. Secaucus, N.J.: Birkhäuser Boston, 1992. 175 pp. $44.50. ISBN 0-8176-3593-9.
- Suppes, Patrick. *Language for Humans and Robots*. Oxford, United Kingdom: Blackwell, 1992. 417 pp., ISBN 0-631-18262-4
- Tong, Christopher; and Sriram, Duvvuru. *Artificial Intelligence in Engineering Design, Volume 2*. Boston: Academic Press, 1992. 388 pp. ISBN 0-12-660562-79
- Tong, Christopher; and Sriram, Duvvuru. *Artificial Intelligence in Engineering Design, Volume 3*. Boston: Academic Press, 1992. 388 pp. ISBN 0-12-660563-7.
- Van der Hoek, W.; Meyer, J.-J.; Tan, Y. H.; and Witteveen, C. *Nonmonotonic Reasoning and Partial Semantics*. New York: ELLIS Horwood, 1992. 238 pp. ISBN 0-13-625146-3
- Varela, Franciso J., and Bourgine, Paul, eds. *Toward a Practice of Autonomous Systems: Proceedings of the First European Conference on Artificial Life*. Cambridge, Mass.: The MIT Press, 1992. 515 pp. ISBN 0-262-72019-1.
- Warwick, K.; Irwin, G. W.; and Hunt, K. J. *Neural Networks for Control and Systems*. London: Peter Peregrinus Ltd., 1992. 260 pp. ISBN 0-86341-279-3.

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