

Publications of David A. Mindell

Books

Digital Apollo: Human and Machine in Spaceflight, MIT Press (Spring, 2008).

Between Human and Machine: Feedback, Control, and Computing before Cybernetics, Johns Hopkins University Press (Spring, 2002).

War, Technology and Experience aboard the USS Monitor, Johns Hopkins University Press, Spring, 2000. (Awarded Sally Hacker Prize for best popular book in the history of technology, Society for the History of Technology).

Journal articles, history of technology:

"Opening Black's Box: Rethinking Feedback's Myth of Origin," *Technology and Culture*, July: 405-34. (Awarded IEEE Life Members Prize in Electrical History), 2000.

"The Clangor of That Blacksmith's Fray: Technology, War, and Experience Aboard the USS Monitor," *Technology and Culture*, April: 242-70. (Awarded Abbott Payson Usher Prize), 1995.

Journal Articles, engineering and archaeology:

B. Bingham, D.Mindell, T. Wilcox, and A. Bowen, "Integrating precision relative positioning into JASON/MEDEA ROV operations", *Marine Technology Society (MTS) Journal*, vol. 40, no. 1, pp. 87-96, Spring 2006

D.A. Mindell, H. Singh, D. Yoerger, L. Whitcomb, J. Howland, "Precision mapping and imaging of underwater sites at Skerki Bank using robotic vehicles," in A.M. McCann and J.P. Oleson, eds., *Deep-water Shipwrecks off Skerki Bank: the 1997 Survey*, *Journal of Roman Archaeology*, Suppl. Series., 2004.

D.A. Mindell and K. Croff, "Deep Water, Archaeology, and Technology Development," *Marine Technology Society Journal*, Vol 36, No. 3, 13-20, 2002.

B.P. Foley and D.A. Mindell, "Precision Survey and Archaeological Methodology in Deep Water," *ENALIA The Journal of the Hellenic Institute of Marine Archaeology*, Volume VI (2002): 49-56.

R.D. Ballard, L.E. Stager, D. Master, D.R. Yoerger, D. Mindell, L.L. Whitcomb, H. Singh, and D. Piechota, "Iron age shipwrecks in deep water off Ashkelon, Israel," *American Journal of Archaeology*, October, 2001.

H. Singh, J. Adams, D. Mindell, and B.P. Foley, "Imaging underwater for archaeology," *Journal of Field Archaeology*, October, 2000.

R.D. Ballard, A.M. McCann, D. Yoerger, L. Whitcomb, D. Mindell, et al., "The discovery of ancient history in the deep sea using advanced deep submergence technology," *Deep-Sea Research I* 47 (2000): 1591-1620.

L. Whitcomb, D. Yoerger, H. Singh, and D. Mindell, "Toward precision robotic maneuvering, survey, and manipulation in unstructured undersea environments," in Y. Shirai and S. Hirose,

editors, *Robotics Research—The Eighth International Symposium* (London: Springer-Verlag, 1998).

Book chapters:

“Precision Navigation and Remote Sensing for Underwater Archaeology” in James Wiseman and Farouk El-Baz, eds., *Remote Sensing in Archaeology* (Springer Verlag, 2007).

D.A. Mindell, “Human and Machine in the History of Spaceflight,” in Dick, Steven J., and Roger D. Launius eds. *Critical Issues in the History of Spaceflight*. Washington, DC: NASA, 2006.

D.A. Mindell, S. Gerovitch, and J. Segal, “From Communications Engineering to Communications Science: Cybernetics and Information Theory in America, France, and Russia,” in Mark Walker, ed., *Science and Ideology: A Comparative History* (Harwood Academic Publishers, 2000).

D. A. Mindell, “Automation’s Finest Hour: Radar and System Integration in World War II,” in Thomas P. Hughes and Agatha Hughes, eds., *Systems, Experts, and Computers: The Systems Approach in Management and Engineering, World War II and After*, MIT Press: 27-56.

2000: G. Smith and D. A. Mindell, “The Emergence of the Turbofan Engine,” in Peter Galison and Alex Roland, eds., *Atmospheric Flight in the Twentieth Century Archimedes New Studies in the History and Philosophy of Science and Technology Volume 3* (Kluwer Academic Publishers):107-56

1999: *Funding a Revolution: Government Support for Computing Research*, National Research Council, Computer Science and Telecommunications Board (Consultant, author of Chapters 4 and 6): 85-135, 159-68.

1999: “Beasts and Systems: Taming and Stability in the History of Control,” in Miriam Levin, ed., *Technology and Control* (Harwood Academic Publishers): 205-24.

1995: “Engineering and the Real World,” in “From Know-How to History,” *Proceedings of the Symposium in Honor of Elting Morison*, MIT STS Working Paper #22, December.

Proceedings of Refereed Conferences:

B. Bingham, B. Blair, and D. Mindell, “on the design of direct sequence spread-spectrum signaling for range estimation,” *IEEE/MTS Oceans Conference 2007*.

B. Bingham, D. Mindell, T. Wilcox, and Andy Bowen, "Integrating SHARPS II precision navigation Into JASON/MEDEA two-vehicle operation", *IEEE/MTS Oceans Conference 2005*.

B. Bingham, D.A. Mindell, D.Yoerger, B.P. Foley and W.Seering, "Acoustic multipath identification with expectation-maximization," *IEEE/MTS Oceans Conference*, Sept. 2003.

D. A. Mindell and B. Bingham, "New archaeological uses of autonomous undersea vehicles," *IEEE/MTS Oceans Conference*, November, 2001.

D. A. Mindell and B. Bingham, "A High-frequency, narrow-beam sub-bottom profiler for archaeological applications" *IEEE/MTS Oceans conference*, November, 2001.

Other Major Publications:

D.A. Mindell, "Bodies, Ideas, and Dynamics: Historical Perspectives on Systems Thinking in Engineering," ESD-MIT Engineering Systems Division working paper 2003-01.23-*ESD Internal Symposium*.

Funding a Revolution: Government Support for Computing Research, National Research Council, Computer Science and Telecommunications Board, 1999 (Consultant, author of Chapters 4 and 6).

National Research Council, Marine Board, Committee on Undersea Vehicles, *Undersea Vehicles and National Needs* (contributing writer and editor), 1997.

"Engineering and the Real World," in "From Know-How to History," *Proceedings of the Symposium in Honor of Elting Morison*, MIT STS Working Paper #22, December, 1995.

Book Reviews (selected):

An Ocean in Common: American Naval Officers, Scientists, and the Ocean Environment. By Gary Weir. *Technology and Culture*, October 2003.

The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency by Robert Kanigel, *Technology and Culture* (January, 1999).

Alexander Graham Bell: The Life and Times of the Man who Invented the Telephone by Edwin S. Grosvenor and Morgan Wesson, *New England Quarterly* (December, 1998).

Disaster on the Mississippi by Gene Eric Salecker, *Journal of American History* (Sept. 1997).

A Quest for Glory: A Biography of Rear Admiral John A. Dahlgren by Robert Shneller, *Technology and Culture* (July, 1997).

The Grammar of the Machine: Technical Literacy and Early Industrial Expansion in the United States Edward W. Stevens, Jr., *Journal of Interdisciplinary History* (Spring, 1997).

Changing Large Technical Systems Jane Summerton, ed., *Technology and Culture* (July, 1996).

The Computer: From Pascal to von Neumann by Herman H. Goldstine, *IEEE Technology and Society* (March, 1996).

High Performance: The Culture and Technology of Drag Racing by Robert C. Post, *IEEE Technology and Society* (April, 1995).

Telerobotics, Automation, and Human Supervisory Control by Thomas B. Sheridan, *IEEE Technology and Society* (June, 1993).

Other reviews, *Byte Magazine* (1988-1990).

Encyclopedia entries, articles in magazines, chapters in popular books (selected):

"What Price Glory? Technology and Experience Aboard the USS Monitor," *BBC History Magazine*, August, 2000.

“Into the New Century,” in Thomas B. Allen ed., *We Americans*, National Geographic Society, 1999.

“Technology’s Interaction with Society,” *Wiley Encyclopedia of Electrical Engineering*, 1999.

“Automation’s Finest Hour: Bell Laboratories’ Control Systems in World War II,” *IEEE Control Systems Magazine*, December, 1995.

“Engineers, Psychologists, and Administrators: Wartime Control Systems Research, 1941-1945,” *IEEE Control Systems Magazine*, August, 1995.

“Fire Control,” and “Military Procurement — Arsenals,” entries in *Oxford Companion to American Military History*, Oxford University Press, 1999.

“Antiaircraft Fire Control and the Development of Integrated Systems at Sperry, 1925-1940,” *IEEE Control Systems Magazine*, April, 1995.

“Shipwrecks of Memory: Excavating Guadalcanal,” *Thresholds* (MIT Department of Architecture and Urban Planning), Spring, 1995.

"Fiber Optics on the Face of the Deep: Computing in the Jason Project," Feature Article, *Byte Magazine*, February, 1990.

"Reading the Analog World: Digital Signal Processing Moves to Micros", Feature Article, *Byte Magazine*, August, 1989.

"Xerox Facilities CAD: Standards and Procedures," *Architectural & Engineering Systems*, August, 1989.

Invited Lectures and conference presentations. (selected, to 2004)

“Feedback, Control, and Computing before Cybernetics,” *American Control Conference*, Boston, June 2004.

“Digital Apollo: Electronics, Manufacturing, and the Flights to the Moon”, *IEEE Bletchley Park Conference on the History of Electronics*, June 2004.

“Historical Perspectives on Systems Thinking,” *MIT ESD External Symposium*, March 2004.

“Precision Navigation in Archaeology,” *DeepArch Seminar*, MIT, February 2004.

“Digital Apollo: Human and Machine in the Race to the Moon,” *Dibner Institute* weekly colloquium, February 2004.

“Precision Navigation and Robotic Surveys in Deep Water,” *California Institute of Technology*, Mechanical Engineering Departmental Colloquium, October 2003.

“Precision Navigation of Undersea Vehicles,” *Woods Hole Oceanographic Institution*, Department of Applied Ocean Physics and Engineering, weekly colloquium, September 2003.

“John Ericsson and the *Monitor*” *American Swedish Historical Foundation*, invited lecture, September 2003.

“Robotic Archaeology in the Deep Sea,” *IEEE Life Members* talk, Lincoln Labs, September 2003.

“Digital Apollo: Human and Machine in the Race to the Moon,” *Johns Hopkins Colloquium in the History of Science*, September 2003.

“Exploring Archaeology in the Deep Ocean,” *American Isotope Society Banquet Speaker*, June 2003.

“Technology, War, and Experience Aboard the USS *Monitor*,” *Mariner’s Museum Hampton Roads Symposium*, March 2003.

“Archaeological Exploration in the Deep Ocean,” *Explorer’s Club Annual Meeting Lecture*, New York, March 2003.

“Perspectives of an Inventor/Historian,” *Lemelson Seminar on Historical Perspectives on Invention*, April, ’03.

“Web-based History of the Apollo Guidance Computer,” *Symposium on History of Recent Science and Technology on the World Wide Web*, MIT, March, ’03.

“Between Human and Machine: Feedback, Control, and Computing Before Cybernetics,” *Authors@MIT Series* (video posted on MIT World), Spring ’03.

“Embodying Cybernetics: Engineers, Astronauts, and the Apollo Guidance Computer,” *Society for History of Technology*, annual meeting, Santa Clara, Calif., October, 2001.

"Automation's Finest Hour: Managing Military Innovation in World War II," *MIT/Cambridge workshop on Cultures of Innovation*, University of Cambridge, May, 2001.

"Automation's Finest Hour: Reflections on the History of Control Systems," *University of Pennsylvania, departmental colloquium, department of History and Sociology of Science and Technology*, April, 2001.

"War, Technology, and Experience aboard the USS *Monitor*," *Colby College departmental colloquium*, STS Program, April, 2001.

"Technology, Archaeology, and the Deep Sea," *University of Pennsylvania, Museum of Anthropology*. March, 2001.

"War, Technology, and Experience aboard the USS *Monitor*," *Explorers Club, New England Chapter*, March, 2001.

"War, Technology, and Experience aboard the USS *Monitor*," *University of Southampton (UK), Department of Archaeology*, March, 2001.

"Technology, Archaeology, and the Deep Sea," *University of Southampton (UK), Oceanography Center*, March, 2001.

“Three Lectures on Technology, Archaeology, and the Deep Sea,” *Program on Maritime Archaeology*, University of Trapani, Sicily. March, 2001.

"Gravity's Other Rainbow: Control Systems and Representation in World War II," *departmental colloquium, Department of German Literature, U.C., Santa Barbara*, February, 2001.

"Technology, Archaeology, and the Deep Sea," *weekly colloquium, Monterey Bay Aquarium Research Institute (MBARI)*, February, 2001.

"The History of Technology and the New Engineering Education at MIT," *Society for the History of Technology annual meeting, Munich, Germany*, August 2000.

“The History of Control Systems,” *EMC Corp. Distinguished Lecture*, March, 1999.

“Archaeological Questions and Technology Development,” *Technology and Archaeology in the Deep Sea* conference, January, 1999.

“From Laboratory to Field: Archaeologists and Technology” (with Brendan Foley), Society for Historical Archaeology annual meeting, Salt Lake City, January 1999.

“Archaeology in the Deep Sea,” *Distinguished Scholars Lecture Series, Rochester Museum and Science Center*, March, 1998.

“Deep Sea Archaeology: Historical and Sociological Perspectives” (with R.D. Ballard et al.) Society for Historical Archaeology annual meeting, Atlanta, Georgia, January 7-10, 1998.

G. Smith and D. A. Mindell, “The Emergence of the Turbofan Engine,” *Dibner Conference on Flight in the Twentieth Century*, Cambridge, Mass., April, 1997.

“Automation’s Finest Hour: Radar and System Integration in World War II,” *Dibner Conference on The Spread of the Systems Approach*, Cambridge, Mass., May 3-5, 1996.

“Control Engineering in World War II: an International Comparison,” Society for the History of Technology annual meeting, London, August 3, 1996. Session organizer.

“Rethinking the History of Information: World War II’s Secret Cybernetics,” departmental colloquium, MIT Program in Science, Technology, and Society, April 1, 1996.

“Naval Control Systems at the Sperry Gyroscope and Ford Instrument Companies,” Naval Academy Historical Symposium, Annapolis, Md., October, 1995.

“The History of Control Systems,” *departmental colloquium, Mechanical Engineering, Johns Hopkins University*, September 21, 1995.

“What Can the History of Control Systems Contribute to the History of Computing?” IEEE Electrical History Conference, Williamstown, Mass., August, 1995.

“The Clangor of That Blacksmith’s Fray: Technology, War, and Experience Aboard the *USS Monitor*,” Social Science History Conference, Atlanta, Georgia, October, 1994.

“From Machinery to Information: Control System Research at MIT in the 1930s,” Society for the History of Technology annual meeting, Lowell, Mass., October, 1994. Session organizer.

Selected oceanographic cruises and projects:

July, 2004: *Co-Principal Investigator*, Precision survey of ancient shipwreck off of Chios, Greece.

August, 2003 *Co-Principal Investigator*, Precision survey of ancient shipwrecks in the anoxic layer of the Black Sea. (Chief Scientist: R.D. Ballard) .

May 2003, *Chief Scientist*, Autonomous Underwater Vehicle (AUV) precision survey of USS *Monitor*.

July, 2001 *Visiting Scientist*, Acoustic profiles of *USS Monitor* turret (guest of *Monitor* National Marine Sanctuary), Hatteras, North Carolina.

June, 2001 *Principal Investigator*, Autonomous underwater vehicle surveys of Nisyros, Greece.

Nov., 2000 *Visiting Scientist*, Acoustic profile surveys of *CSS Hunley*, Charleston, South Carolina.

Sept., 2000 *Chief Scientist*, Precision sonar surveys of *Defense*, Penobscot Maine.

July, 1999 *Co-Chief Scientist*, Sinop Sonar and Video Surveys, continuing survey of Black Sea area and shipwrecks/possible dwelling sites located in 1998.

June, 1999 *Co-Principal Investigator*, Archaeological Surveys off Ashkelon, Israel.

July, 1998 *Chief Scientist*, Sinop Sonar Surveys, survey of coastal area of Black Sea surrounding port of Sinop, Turkey.

May, 1998 *Co-Chief Scientist*, Midway Yorktown Expedition, discovery of WWII aircraft carrier *Yorktown*.

June, 1997 *Co-principal investigator*, Skerki Bank '97 project, search and survey of Roman and Carthaginian shipwrecks in Mediterranean.

August, 1993 *Engineer/navigator* photographic and sonar survey of *Lusitania*, off Kinsale, Ireland.

August, 1992 *Engineer/navigator* photographic survey of Japanese and American warships in Guadalcanal, Solomon Islands.

Nov., 1991 *Engineer/navigator*, Jason Project, Galapagos Islands, Ecuador.

August, 1991 *Engineer/navigator*, *CREST (JASON/ALVIN)* surveys of hydrothermal vent sites, Juan de Fuca ridge, Pacific Ocean.

July, 1991 *Engineer/navigator*, JASON survey, Dumpsite 106, Atlantic Ocean.

April, 1990 *Engineer/navigator* photographic and sonar survey of *Hamilton* and *Scourge*, Hamilton, Ontario.