

David A. Thompson

Professor Emeritus of Industrial Engineering and Engineering Management
Department of Management Science and Engineering
Stanford University, Stanford, California

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Areas of Specialization:

- Human Factors Engineering
- Ergonomics
- WARNINGS Evaluation
- Slip, Trip, Misstep and Fall Analysis
- Biomechanical Analysis of Activities
- Reconstruction of Personal Injury Events Involving Products and Facilities
- Human Activity Errors vs. System Design Defect

Education:

- B.S. Mechanical Engineering (Machine Design Option), University of Virginia
- B.S. Industrial Engineering (Production Specialty), University of Florida
- M.S. Engineering (Engineering Economics Thesis), University of Florida
- Ph.D. Industrial Engineering (with Occupational Medicine), Stanford University

Professional Registration:

- Registered Professional Industrial Engineer in California (No. I-0084).
- Certified Professional Ergonomist (No. 048), Board of Certification in Professional Ergonomics.
- National Academy of Forensic Engineers Fellow, and Board Certified Diplomate in Forensic Engineering by NAFE (No. 660F), program accredited by the Council of Engineering and Scientific Specialty Boards.
- Member, Industrial Engineering Applicant Review Committee of the California State Board of Registration for Civil and Professional Engineers, 1967.

Honors:

Graduated with **High Honors**, University of Florida
Elected to **Phi Kappa Phi** Honor Society
Elected to **Sigma Xi** Honorary Society (Scientific)

Listed in *Who's Who in the West*, *Who's Who in America*, *Who's Who in the World*, *Who's Who in Science and Engineering*, *Who's Who in the Safety Profession*, *Who's Who in Society*, *Personalities of the Americas*, *International Who's Who*, *American Men and Women of Science*, *Men of Achievement*, *The Directory of Distinguished Americans*.

Academic Experience:

- 1956-61 *Acting Instructor, and Acting Assistant Professor.* Department of Industrial Engineering, Stanford University
- 1961-64 *Assistant Professor,* Department of Industrial Engineering, Stanford University
- 1964-72 *Associate Professor,* Department of Industrial Engineering, Stanford University
- 1972-77 *Professor and Associate Chairman,* Department of Industrial Engineering; Affiliated Faculty, Design Division and Health Services Administration Program, Stanford University
- 1977-83 *Professor,* Department of Industrial Engineering and Engineering Management, Stanford University
- 1983- *Professor Emeritus,* Department of Industrial Engineering and Engineering Management, and Department of Management Science and Engineering, Stanford University
- 1986-00 *Clinical Faculty,* Department of Occupational and Preventive Medicine, University of California Medical Center, San Francisco

Representative Professional Industrial Consulting Experience:

- *General Electric Company,* Atomic Power Equipment Department, San Jose, CA.
- *Agency for International Development,* U.S. Department of State.
- *Dalmo Victor Company,* San Carlos, CA. [F-111 design, Secret Security Clearance.]
- *Svenska Cellulosa AB,* Sundsvall, Sweden
- *Electrolux AB,* London, England.
- *Almana Svenska Elektriska Aktiebolaget,* Vasteras, Sweden
- *United Airlines,* San Francisco, CA.
- *Pacific Telephone and Telegraph,* San Francisco, CA
- *Alfa Laval Bergedorfer Eisenwerk,* Hamburg, Germany.
- *Naval Weapons Center,* China Lake, CA.
- *Stanford Research Institute,* Menlo Park, CA
- *Cia Vale do Rio Doce,* Rio de Janeiro, Brazil
- *Santa Clara County Criminal Justice Planning Board,* San Jose, CA.
- *FMC Corporation,* Santa Clara, CA.
- *Electric Power Research Institute,* Palo Alto, CA.
- *Government of Mexico,* Mexico City, D.F.
- *Lawrence Berkeley Laboratories,* Berkeley, CA
- *Kerr-McGee Corporation,* Grants, NM.
- *Chase Manhattan Bank,* New York, NY.
- *Skidmore, Owings, and Merrill,* San Francisco, CA
- *Chevron, USA,* Concord, CA
- *International Brotherhood of Teamsters,* Local 396, Modesto, and Local 490, Vallejo, CA
- *San Francisco Municipal Railway,* San Francisco, CA
- *United Nations International Atomic Energy Agency,* Vienna
- *Pacific Gas & Electric Company,* San Francisco, CA; and *International Brotherhood of Electrical Workers,* Walnut Creek, CA. [Joint sponsorship]
- *Pacific Telephone Company,* San Francisco, CA.
- *Pepsico, Incorporated,* Dallas, TX
- *University of California,* Berkeley, CA
- *IBM Corporation,* San Jose, CA.
- *Santa Clara County Communications Center,* San Jose, CA.
- *Palo Alto Police Department,* Palo Alto, CA
- *American Association of Retired Persons,* Washington, DC
- *Hewlett-Packard Corporation,* Palo Alto, CA

- *Reuters News Service*, New York, NY.
- *Apple Computer Company*, Cupertino, CA.
- *Sun Microsystems*, Mountain View, CA.
- *Safeway*, Oakland, CA.
- *Genentech, Inc.*, South San Francisco, CA.
- *New United Motors Manufacturing Company*, Fremont, CA [Jointly with Cal/OSHA]
- *Microsoft*, Redmond, WA. .
- *ECA International*, Madrid, Spain
- *San Francisco General Medical Center*, San Francisco, CA. .

Research

- *Research Associate*, Division of Rehabilitation Services, Stanford School of Medicine (NIH Office of Vocational Rehabilitation)
- *Research Associate*, Human Factors Lab, Stanford School of Engineering (NASA)
- *Principal Investigator*, Biotechnology Lab, Stanford School of Engineering. . (NSF)
- *Principal Investigator*, Biotechnology Lab, Stanford School of Engineering. (NASA)
- *Collaborator*, Veterans Hospital, Palo Alto, CA (HEW)
- *Collaborator*, Department of Transportation, (Urban Mass Transit Administration)
- *Principal Investigator*, Environmental Systems Laboratory, Ames Research Center (NASA)
- *Principal Investigator*, Man-Machine Integration Branch, Ames Research Center (NASA).
- *Collaborator*, Electronic Information Exchange System (NSF).
- *Participant*, Human Performance Technology, Incorporated. (Nuclear Regulatory Commission).
- *Principal Investigator*, Manned Systems Research Branch, Ames Research Center (NASA)
- *Consultant*, El Camino Hospital, Mountain View, CA. (NIH)
- *Consultant*, University of California School of Medicine, San Francisco, CA. (UMTA)
- *Consultant*, California State Department of Health, Berkeley, CA (CDDH)

Published Articles and Chapters in Texts and Encyclopedias:

Solutions to Problems, Principles of Engineering Economy (Grant Ireson), Ronald Press, New York 1960.

(With M. Acker) "Development of the Prevocational Unit: Stanford Rehabilitation Service". Archives of Physical Medicine, Vol. 14, May 1960, p. 195.

(With M. Acker) "A Detailed Physiological Difficulty Analysis of Manual Work", Journal of Methods Time Measurement, Sept.-Oct. 1960, P. 1-6.

On the Evaluation of Human Ability to Perform Industrial Work, unpublished doctoral dissertation, Stanford University, Stanford, CA, June 1961.

"The Development of a Quantified Difficulty Measure for Precision Work", The Journal of Methods Time Management, July-August 1963, pp. 8-16.

"Development of an Elemental Motion Analysis for Man-Work Matching in Vocational Rehabilitation and Placement", Archives of Physical Medicine and Rehabilitation, October 1963, pp. 545-548.

"Calibrating Observer Bias in Time Study Pace Estimation", Journal of Industrial Engineering Technical Notes, November-December 1963, p. 345.

(With P. Applewhite and G. Pauhle) "Frequency Distribution Shape and Work Output", Perceptual and Motor Skills, Vol. 20, 1965, pp. 407-408.

(With P. Applewhite and G. Pauhle) "Prediction of Drive State and Output from Frequency Distribution Shape", Perceptual and Motor Skills, Vol. 21, 1965, pp. 505-506.

An Industrial Engineering Analysis of the Ostrand Sulfate Pulp and Chloride, prepared for Svenska Cellulosa AB, Sundsvall, Sweden, Stanford Research Institute Report 1-5559, October 1965.

(With J. M. Leslie) "Human Frequency Response as a Function of Visual Feedback Delay," Human Factors Journal, December 1968 (10) 1.

(With L. A. Bennigson and D. Whitman) "A Proposed Structure for Displayed Information to Minimize Search through a Data Base". American Documentation, January 1968, pp. 80-84.

(With P. B. Applewhite) "Objective Effort Level Estimates in Manual Work", Journal of Industrial Engineering, February 1968, pp. 92-95.

"Elemental Sensory-Motor Performance Evaluation to Determine Man-Work Compatibility In Job Placement", MTM Journal, March-April, 1968.

"The Man-Computer System: Toward Balanced Cooperation in Intellectual Activities", Proceedings of the International Symposium on Man-Machine Systems, Vol. 1, Cambridge, England, 8-12, September 1969.

"Application of Coding Theory to Document Indexing", Proceedings of the Third Hawaii International Conference on System Sciences, January 1970.

"Interface Design for an Interactive Information Retrieval System: A Literature Survey and Research System Description", Journal of American Society for Information Science, Vol. 22, No. 6, November-December 1971.

"Interactive Computer Graphics in Medical Information Retrieval and Classification", Computer Graphics 6; 4, Winter 1972.

"A Financial Alternatives Planning Model for a Health Maintenance Organization", Proceedings of the Center Forum on Health Facilities Planning, Washington, DC, December 3-4, 1973.

"Financial Planning for an HMO", Health Services Research, spring 1974.

A Human Factors Engineering Analysis of the Proposed Computer-Aided Public Safety System for Santa Clara County, technical report submitted to the Santa Clara County Criminal Justice Planning Board, September 16, 1975.

Development of a Driver Screening Test for the Greyhound Corporation, technical report submitted to the sponsors, Phoenix, AZ, November 11, 1975.

"The Man-Robot Interface: Design of the Teaching Controls", 1976 Joint Automatic Control Conference, Purdue University, West Lafayette, IN, July 27-30, 1976. (Invited).

"The Man-Robot Interface in Automated Assembly", Monitoring Behavior and Supervisory Control, T. B. Sheridan and G. John Johannsen, eds., Plenum Press, New York and London, 1976.

"The Development of a Six Degree-of-Constraint Robot Performance Evaluation Test", Thirteenth Annual Conference on Manual Control Proceedings, Cambridge, MA, June 15-17, 1977.

(With K. Hasegawa and J. Jones) "Comparative Performance Evaluation of Remote Teleoperator Robot Manipulation", Seventh Annual International Symposium on Industrial Robots, Tokyo, Japan, October 19-21, 1977.

(With P. Kirschner) "Decision Tree Display Parameters for Interactive Graphics Computers", International Conference in Interactive Techniques in Computer-Aided Design Proceedings, Bologna, Italy, September 21-23, 1978.

Human Factors Issues in Proposed Aircraft Caution and Warning System Experimentation, NASA Contract Report, Contract NCA2-DR 745-710, Ames Research Center, Moffett Field, CA, May 1979.

"Commercial Air Crew Detection of System Failures: State of the Art and Future Trends", NATO Symposium on Human Detection and Diagnosis of System Failures Proceedings, Roskilde, Denmark, August 4-8, 1980. Also in Rasmussen, J. and W. B. Rouse, eds., Human Detection and Diagnosis of System Failures, Plenum Press, New York, 1981.

(With S. Douglas and M. Junge) "Information-Decision-Action Charts: A Tool for the Ergonomic Analysis of Computerized Control and Information Systems", Joint IEA/NES International Conference on Ergonomics in Action Proceedings, Oslo, Norway, August 20-22, 1980.

"Computerized Wastebaskets and Electronic Bookcases: New VDT Interfaces", Human Factors Society Bulletin, Vol. 26 No. 4, April 1983.

"Unrest in the Data Entry Department: Time Running Out?", Computer Decisions, Vol., 15 No. 5, p. 164. May 1983 (interview).

(With Thomas Sheas of INET Corporation) Human Factors Affecting IAEA Inspector Performance, prepared for the International Atomic Energy Agency, US Arms Control and Disarmament Agency, Vienna, Austria, September 1983, 83 pages.

(With C. Lupi, L. Morse, J. Ladou, and V. Ernster) "Carpal Tunnel Syndrome and Occupation: A Matched Case Control Study", Clinical Research, 32, #1, 40a, 1984.

(With T. Meites, M. Herbert and T. McLaughlin) A Program to Design and Develop an Unbiased New Hire Screening Process for Entry Level Jobs at Libbey-Owens-Ford, for the US Equal Employment Opportunity Commission, Chicago District Office, July 1, 1985.

(With D.C. McEvers and C.A. Olson) "Case Study in Data Entry System Design", Human Factors Society 30th Annual Conference Proceedings, Dayton, OH, September 1986.

"Comparison of Stress Levels and Musculoskeletal Discomfort Among VDT and Other Machine Operators", International Ergonomics Association 10th International Congress Proceedings, Sydney, Australia, August 1-5, 1988.

"Fault Logic Analysis of Product Safety", Proceedings of the Human Factors Society, Anaheim, California, October 24-28, 1988, pp. 527-531.

(With A.M. Osorio, et. al.) "Carpal Tunnel Syndrome Among Grocery Store Workers: A Medical/Neurodiagnostic Survey", Proceedings of American Public Health Association 117th Annual Meeting, Chicago, IL, October 22-26, 1989. Also, FI-86-005, California Occupational Health Program, California Department Health Services, Berkeley, CA, June 22, 1989.

"Ergonomics and the Prevention of Occupational Injuries", Chapter 6 in J. LaDou, (Ed.) Occupational Medicine, E. Norwalk, CT: Appleton & Lange, 1990.

(With J. Thomas, J. Cone, A. Daponte, and R. Markison) "Analysis of the TONY!™ Variable Geometry VDT Keyboard", Proceedings of the Human Factors Society 34th Annual Meeting Orlando, Florida, October 10, 1990.

"Effect of Exercise Breaks on Musculoskeletal Strain Among Data Entry Operators: A Case Study," Chapter 7 in M. Dainoff, S. Sauter, and M. Smith (Eds.) Promoting Health and Productivity in the Computerized Office: Models of Successful Ergonomic Interventions, London: Taylor & Francis, 1990.

"Ergonomics," Chapter 30, R. Anderson and A. White (Eds.), Conservative Care of Low Back San Francisco: Williams & Wilkins, 1991.

"Video Display Terminal Worker Safety Ordinance, San Francisco, California, USA", Displays Technology and Applications, 13 (3), 161-164, 1992.

"Ergonomic Issues in Occupational Overuse Syndrome", Best's Safety Directory. 1993 Edition, Oldwick, NJ: A.M. Best Company, Inc.

"Industrial Engineering and Ergonomics", Chapter 11 in J. LaDou (Ed.) Occupational Health and Safety (2nd ed.), Chicago: National Safety Council, 1994.

(With A. Osorio, R. Ames, J. Jones, J. Castodna, D. Rempel, and W. Estdn), (1994) "Carpal Tunnel Syndrome Among Grocery Store Workers", American Journal of Industrial Medicine, 25, 229-245.

"Analysis of the effect of keyboard tactile feedback on typing force", Proceedings of the Industrial Ergonomics and Safety Conference, San Antonio, Texas, June 8-10, 1994.

"Effect of type of keyboard tactile feedback on VDT operator keying forces", Proceedings of Work With Display Units Fourth International Scientific Conference, Milan, Italy, October 2-5, 1994.

"Analysis of VDT Keyboard Tactile Feedback", (1995), in A.C. Bittner and P.C. Champney (Eds.), Advances in Industrial Ergonomics and Safety (pp. 613-618), Taylor & Francis.

"When Is a 'Warning' Not a WARNING!" (July, 1995), Ergonomics in Design, 25-28.

"Keyboard Tactile Feedback and its Effect on Keying Force Applied", H-J Bullinger and J. Ziegler, eds., Human-Computer Interaction, Ergonomics and User Interfaces, Vol. 1 [Munich, Germany, August 23, 1999] Lawrence Erlbaum Associates, London, New Jersey, p. 157-161.

"Ergonomics Programs", (with I. Janowitz), in Balge & Krieger, eds., Occupational Health & Safety (3rd ed.), National Safety Council, 2000.

"Mock Trial: Human Factors Contributions to Litigation Involving Adaptive Cruise Control" (with Y.I. Noy, A. Vredenburgh et al., Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and 44th Annual Meeting of the Human Factors and Ergonomics Society, San Diego, CA, August 2, 2000, p. 398.

"Keyboards" in International Encyclopedia of Ergonomics and Human Factors, W-Karwowski (ed.), Taylor & Francis, London (2001).

"A Guide to Forensic Human Factors Terminology," (with D. Johnson, D. Horst, H. Cohen, and R. Olsen), Section VII, in Handbook of Human Factors in Litigation, Y.I. Noy and W. Karwowski, eds., CRC Press, 2004.

"Forensic Human Factors Engineering in Traffic Incident Reconstruction," Mozayani, A. & G. Sapir, eds., Forensic Examination of Vehicle Traffic, Driving, and Driving Violations, Taylor & Francis., New York, NY (in press).

"Forensic Engineering Analysis of Whole-Body Vibration Effects on Garbage Truck Operators" in Journal of the National Academy of Forensic Engineers 23(1) June 2006.

Representative Professional Lectures, Seminars, and Talks [134 total]:

'Elemental Sensory-Motor Performance Evaluation to Determine Man-Work Compatibility in Job Placement', American Society for Engineering Education Annual Meeting, Philadelphia, PA, June 18, 1963.

"Information Theory in Mental Work Measurement", Western Regional Conference of the American Institute of Industrial Engineers, San Francisco, CA, January 22, 1964.

"Predicting Operator Drive State from Psychomotor Performance Measurements", Human Factors Society Annual Conference, Washington, DC, October 20, 1964.

"Human Frequency Response as a Function of Visual Feedback Delay", Human Factors Society, Tenth Annual Meeting, Anaheim, CA, November 2, 1966.

"Man-Machine Decision Problems in Information Retrieval", Department of Industrial and Systems Engineering Seminar, University of Florida, Gainesville, FL, March 1, 1967.

"Human Factors Engineering Concepts", Program Managers Course, Naval Ordnance Test Center, China Lake, CA, May 8, 1967.

"Structuring Information Bases to Minimize User Search Time", American Documentation Institute Annual Convention, New York, NY, October 22, 1967.

"Human Information Processing and Ergonomics", Applied Physics Seminar, Shell Development Company, Emeryville, CA, April 30, 1968.

"Man-Computer System: Toward Balanced Cooperation in Intellectual Activities", International Symposium on Man-Machine Systems, Cambridge, England, September 9, 1968.

"A Proposed Structure for Displayed Information to Minimize Search Time Through a Data Base", American Society for Information Sciences Annual Convention, Columbia, OH, October 22, 1968.

"A Methodical Approach to Presenting Human Factors Principles to Industrial Engineers", Human Factors Society Annual Convention, Chicago, IL, October 30, 1968.

"An Interactive Computer Graphics-Based Medical Information Retrieval System", Extramural Research Grants Group, National Library of Medicine, Bethesda, MD, November 12, 1970.

"Advanced Interactive Computer Graphics", ACM Tutorial Workshop on Computer Graphics, Houston TX, November 16, 1970.

"Interactive Computer Graphics Displays for Document Retrieval", IBM Research Laboratory, San Jose, CA, January 20, 1971.

"Man-Computer Interface Design for Interactive Information Retrieval", NASA Seminar, Ames Research Center, Moffett Field, CA, May 19, 1971.

"Interactive Computer Graphics: Medical Information Retrieval and Classification", Computer Graphics in Medicine (ACM), Point Park College, Pittsburgh, PA, March 7-10, 1972.

"Software for Display Terminals" and "Interfacing with Human Factors", Society for Information Display Annual Convention, San Francisco, Ca, June 6.7,1972.

"Computer Graphics Engineering Applications" and "Information Retrieval and Business Applications", Computer Graphics Conference, University of Bologna, Italy, September 14-15, 1972.

"Adaptive Document Retrieval Displays to Accommodate System Learning", American Society for Information Science Annual Convention, Washington, DC, October 25, 1972.

"Future Shock - Technological Revolution and the Stanford Education", Heritage Foundation, Stanford University, Stanford, CA, February 13, 1974.

"Rapid Transit Information Systems", Commonwealth Club (Transportation Committee), San Francisco, CA, June 10, 1975.

"The Man-Robot Interface In Automated Assembly", NATO International Symposium on Human Factors, Berchtesgarden, West Germany. March 8-12, 1976.

"Man-Machine Systems Analysis of Robot Programming", Forschungsinstitut Fur Anthropoteknik, Mechenheim, Federal Republic of Germany, March 15, 1976.

"Programmable Robotics in Advanced Automation Systems", Collins Radio (Rockwell International Production Managers Symposium, Newport Beach, CA, April 22, 1976.

"The Development of a Six Degree-of-Constraint Robot Performance Evaluation Test", Thirteenth Annual Conference on Manual Control, Cambridge, MA, June 17,1977.

"Comparative Performance Evaluation of Remote Teleoperator Robot Manipulation", Seventh Annual International Symposium on Industrial Robots, Tokyo, Japan, October 21, 1977.

"Decision Tree Display Parameters for Interactive Graphics Computer", International Conference in Interactive Techniques in Computer-Aided Design, Bologna, Italy, September 22, 1978.

"Human Factors in the Nuclear Power Industry", Lawrence Livermore Laboratory, Livermore, CA, September 29, 1978.

"The Function and Role of an Industrial Engineer in Title VII Litigation", 6th Annual Employment Discrimination Litigation Symposium, USF Law School, San Francisco, CA, January 11, 1980.

"What Occupational Medicine and Industrial Engineering Can Learn From Each Other", Keynote Address, Second Annual Occupational Medicine Seminar, SRI International, Menlo Park, CA, April 18,1980.

"Ergonomics", Miniresidency in Occupational Medicine, University of California San Francisco, Medical School, San Francisco, CA, [11 presentations, 1980-1993].

"Society's Acceptance of Robots in the United States", Osaka Symposium on the Contribution of Microelectronics to the Enhancement of Human Life, Osaka, Japan, August 19-20, 1982.

"Robots and Humans", Osaka Symposium on Microelectronics and the Enhancement of Human Life, Osaka, Japan, August 19-20, 1982.

"Ergonomics in Automobile Assembly", Nissan Motor Company, Ginza, Tokyo, Japan, September 1, 1982.

"Toward an Operational Definition of 'User-Friendly' Systems", Human Factors Society Computer Systems Group Workshop, Vail, CO, April 11-14, 1983.

"Ergonomics, Workplace Design, and Preplacement Strength Testing", California Medical Association 12th Annual Conference, Los Angeles, CA, March 11, 1983.

"Information Handling for People with a Messy Desk: Second Generation Microcomputer Display Ergonomics and Its Impact on your Working Lifestyle", NASA Goddard Space Center Visiting Scientists Program, Greenbelt, MD, October 31, 1983.

"Vision and Other Ergonomic Aspects of the Design of the VDT Workplace", invited testimony at hearings before the Labor and Employment Committee of the State Assembly, concerning AB 3175, Sacramento, CA, October 19, 1984.

"Ergonomics of Lifting and Moving", Occupational Health and Safety for Nurses in Hospitals and Clinics, California Nurses Association, Merritt Perafta Hospital, Oakland, CA, May 2, 1986.

"A Look at the Working Environment", Stress Management in the Transit Industry, University of Wisconsin, Milwaukee, WI, October 28, 1987.

"Introduction and Overview of Basic Occupational Engineering", Ergonomics: Human Factors in the Industrial Environment, Northern California Occupational Health Center, University of California, Berkeley, CA, March 22-23, 1988.

"Comparison of Stress Levels and Musculoskeletal Discomfort Among VDT and Other Office Machine Operators", Proceedings of the International Ergonomics Association, Sydney, Australia, August 1-5, 1988.

"Cal/OSHA VDT Advisory Committee Report", Pacific Coast Electrical Association, San Jose, CA, April 13, 1989.

"Repetitive Strain Injury", AT&T Joint Workcenter Planning Conference, St. Louis, MO, June 19-20, 1990.

"VDT Workstations: Ergonomics, Health, Safety, and Productivity" Data Entry Management Association 14th Annual Conference and Exposition, Las Vegas, NV, October 16, 1990.

"Office Ergonomics Standards", TUV Rheinland of North America, Inc., Orlando, Florida, Nov. 1-2, 1990.

"Fault Logic Methodology for Analyzing Human/Machine Error", Arnold Small Lecture in Safety at Human Factors Society Annual Meeting, San Francisco, CA, September 5, 1991.

"VDTs: Physical and Visual Ergonomics: Facts and Myths", National Safety Council, New Orleans, LA, October 8, 1991. (Presented jointly with James Sheedy, University of California, Berkeley).

"Office Ergonomics", Shell Oil Company, Bakersfield, CA, January 28, 1992; February 17, 1993.

"Occupational Biomechanics", Los Angeles College of Chiropractic, Honolulu, HI, October 12-13, 1991; Los Angeles, CA, February 15, 1992.

"The TONY! Keyboard", IEEE Conference on Computers and Communications, Phoenix, AZ, April 1-3, 1992.

"Warnings", (Panel) Human Factors Society, Tandem Computer Corporation, Cupertino, CA, November 18, 1992.

"VDT Workplaces in a Global Market", TUV Rheinland, San Diego, CA, February 24-25, 1993.

"Ergonomics in the Workplace", Eighth Annual Conference of the Society for Industrial and Organizational Psychology, San Francisco, CA, May 1, 1993.

"The Current State of Safety and Health in Eastern Europe", American Society of Safety Engineers, Greater San Jose Chapter, Sunnyvale, CA, May 11, 1993.

"The Product Warning Expert: When is a warning not a warning?" Barristers Club of San Francisco, sponsored by Bar Association of San Francisco, October 29, 1996.

"An Economic Evaluation of Ergonomics", Golden Empire Safety Society, at Stockdale Country Club, Bakersfield, CA, January 28, 1997.

"Biomechanics of Lifting: Returning the Injured to Work" Grand Rounds, University of California Medical School, San Francisco, CA, April 23, 1998.

"Human Factors: Human Error Explained" Society of Forensic Engineers and Scientists, Big Sur, CA, April 1, 2000.

"Effect of Large Machinery Control Design on Operator Injuries" Society of Forensic Engineers and Scientists, Paris, France, August 28, 2002.

"Useful and Problematic Human Factors Forensic Terms," Panelist and Presenter, Human Factors and Ergonomics Society Annual Conference, Denver, CO, October 14, 2003.

"Warnings and Hazards: When to Warn, How to Warn" Society of Forensic Engineers and Scientists, Mendocino, CA, April 23, 2005.

"Analysis of the Trajectory of a Suspected Weapon Throw" International Association of Forensic Scientists, 17th Meeting, Hong Kong, China, 21-26 August, 2005.

"Forensic Engineering Analysis of Whole Body Vibration Effects on Garbage Truck Drivers," National Academy of Forensic Engineers, Washington, DC, January 22, 2006.

"Science of Slipping and Falling," Society of Forensic Engineers and Scientists, Yosemite Valley, CA, March 25, 2006.

"How to Present Technical Material to Groups," Society of Forensic Engineers and Scientists, Yosemite Valley, CA, March 1, 2008

"Challenges in Forensic Practice and Ethics for Expert Witnesses," Human Factors and Ergonomics Annual Meeting, New York, NY, September 25, 2008 (Panel Discussion).

"The Ergonomist's Role as an Expert Witness," The National Ergonomics Conference and Exposition, Las Vegas, NV, December 2-5, 2008.

Selected Workshops Directed:

"Visual and Physical Aspects of VDT Use", sponsored by the Human Factors Society and the Society for Information Display, Monterey Conference Center, Monterey, CA, 1984.

"Ergonomics and Safety Engineering", Workshop at the Spring Symposium on Back Pain, Anaheim, CA, May, 1987: Repeated at Fall Symposium on Back Pain, December 1987.

"VDT Workstations: Ergonomics, Health, Safety and Productivity", sponsored by the University Consortium for Continuing Education, [Repeated 20 times at various US locations, 1987-1995].

American Back Society Fall Symposium on Back Pain, San Francisco, CA: Dec. 1-2, 1988 (with Tom Signore) "Ergonomics and Safety Engineering: Practical Applications to the Work Place"; [Repeated 6 times, 1988-1993].

"VDT Ergonomics and the San Francisco VDT Ordinance", Rucker Fuller, San Francisco, CA, [Repeated 8 times, 1991-1992].

Professional Societies:

American Institute of Industrial Engineers:

- Member of the Board of Directors, Peninsula Chapter, 1961-62, 1962-63.
- Chairman, Management Controls Conference, Palo Alto, CA, March 1961.
- Chairman, Annual Industrial Engineering Spring Conference, Palo Alto, CA, and April, 1962.
- Co-chairman, 3rd Annual Industrial Engineering Spring Conference, Palo Alto, CA, Mar. 1963.
- Co-chairman, Annual Industrial Engineering Spring Conference, Palo Alto, CA, March, 1974.
- Committee Member, National Task Force on Industrial Engineering Definitions, 1962-63.
- Faculty Advisor, Student Chapter, Stanford, 1957-58, 1959-60, 1961-62, and 1968-71.
- Director, Western Region Student Chapters, 1964-65.
- President, Bay Area Chapter, 1980.
- Member, Society of Work Science

Human Factors and Ergonomics Society:

- Director, Bay Area Chapter, 1966.
- Vice President, Bay Area Chapter, 1966.
- Publicity Chairman, 1967-68.
- National Conference Co-chairman and Program Chairman, Annual Conference, San Francisco, CA, 1977.
- President, Bay Area Chapter, 1980.
- Director, Bay Area Chapter, 1981, 1992.
- Forensic Professional Technical Group Program Chairman, 1990.
- General Chair, Annual Convention, San Francisco, CA, September, 1991.
- Secretary, Forensic Human Factors and Ergonomics Glossary Committee.
- Interorganizational liaison for ASTM 34-85, Ergonomics, 1993-1998
- Member, ANSI/HFES-100 Revision Committee; Secretary, Subcommittee on Input Devices and Keyboards, 1992-2001

American Society of Safety Engineers

- Delegate, Citizens Ambassador Program in Systems Safety, Eastern Europe, Summer 1990.

World Safety Organization

- Member, Rail Transport Safety Committee, 1990-

American Society for Testing Materials

- Member, E 34.80 Occupational Health and Safety Committee, 1990--
- Secretary, E 34.85, Occupational Ergonomics Subcommittee, 1992—
- Member, F 13, Pedestrian/Walkway Safety and Footwear Committee

- Member, F 13.50, Walkway Surface Practices Subcommittee
- Member, F 15, Consumer Products Committee, 2002--
- Member, F 15.22, Toy Safety Subcommittee
- Member, F 15.09, Home Playground Equipment Subcommittee
- Member, F 15.29, Public Playground Equipment Subcommittee

Institute of Electrical and Electronics Engineers

International Conference of Building Officials, and International Code Council

National Society of Professional Engineers

American Society of Agricultural and Biological Engineers

Society of Forensic Engineers and Scientists

- General Chair, October 2001 Conference, Crystal Bay, NV.
- General Chair, October 2006 Conference, Incline Village, NV
- Board of Directors, 2004-2011
- Membership Chairman, 2004-2011

Society of Automotive Engineers

American Academy of Forensic Science

Sigma Xi Scientific Research Society

National Academy of Forensic Engineers

- Fellow

National Fire Protection Association:

- Member, Architects and Engineers Section

Military Service:

U.S. Navy Line Officer, Destroyers, Atlantic Fleet, 1951-54; Active Reserve, 1947-1951, 1954-1958. United Nations Medal, Navy Occupation Medal, Korean, China, and National Defense Service Ribbons. [Top Secret Security Clearance.]

Service on Hearing, Editorial, Advisory, and Standards Boards:

- Independent Member, San Francisco Municipal Railway Accident Review Board, 1985-92
- Member, State of California OSHA Advisory Committee on VDT Terminals 1989-1992.
- Member, Advisory Board, San Jose State Department of Industrial and Systems Engineering, San Jose, CA (DHHS) 1989-1991.
- Director, Condie College of Technology, San Jose, 1990's.
Member, American National Standards Institute BSR-HFES *Human Factors Engineering of Computer Workstations*, Secretary, *Input Devices and Keyboards Subcommittee*. 1992-2001,
- Member, American Society of Testing Materials (see above under "Professional Societies")
- Editorial Review, *International Journal of Occupational and Environmental Health*.

Television Interviews:

- 1984: KTVU, Channel 11, San Jose, CA; Subject: Office Ergonomics.

- 1987: KCBS Channel 5, San Francisco, CA; Subject: Carpal Tunnel Syndrome.
- 1989: KTVU, Channel 20, San Francisco, CA. Subject: VDT Advisory Committee Report to Cal/OSHA.
- 1989: CNN, San Francisco, CA. "Sonya Live in L.A." Subject: VDTs and Your Health.
- 1990: KNBC, San Francisco, CA. Subject: Analyzing Repetitive Strain Injury Among VDT Operators.
- 1999 KQED (PBS), San Francisco, CA. "The News Hour with Jim Lehrer"; Subject: Airline Baggage (August 19, 1999).

Films:

- 'Rapid Answers for Rapid Transit', (Directed and assisted with script and editing), Urban Mass Transit Administration, released March 1974.
- 'Office Ergonomics Training Program' (Narrated and appeared in), US West, Seattle, Washington, November, 1990.
- 'Principles of Ergonomics in the Computer Classroom', Produced by Frank B. Hall for the Colorado School Districts Self Insurance Pool, 1991.
- "Keeping Your Back in Action", Krames Communications, San Bruno, CA, 1991.
- "How Human Factors Experts Contribute to Civil Litigation", Case 1: *A Pedestrian's Encounter with a Tripping Hazard*, Mock Trial, September, 1997, Human Factors and Ergonomics Society, Santa Monica, CA, 1998.
- "Human Factors Contributions to Litigation involving Automatic Cruise Control" Mock Trial, Human Factors and Ergonomics Society and the International Ergonomics Society, San Diego, CA, August, 2000

Expert Witness Experience in Litigation:

Available separately to attorney clients upon special request to Portola Associates, Inc.