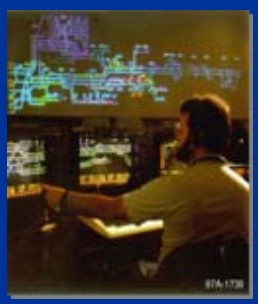
Committee on Human-Systems Integration

National Research Council

Division of Behavioral and Social Sciences and Education




Human-Systems Integration at the National Academies:

A Celebration of 30 Years (1980-2010)

2 December 2010

The National Press Club
The Murrow, White, and Lisagor Rooms
10:00 a.m. – 4:30 p.m.

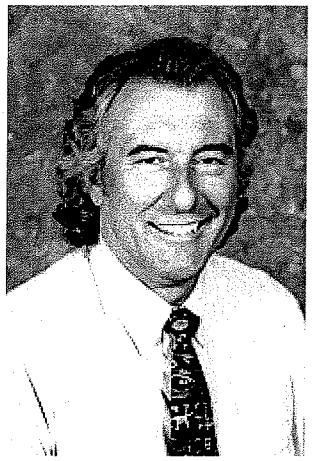
THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

Division of Behavioral and Social Sciences and Education
Committee on Human-Systems Integration

500 Fifth Street, NW
Washington, DC 20001
Phone: 202 334 2678
Fax: 202 334 2210

Welcome!

Human-Systems Integration at the National Academies: A Celebration of 30 years (1980 – 2010)



It is with a tremendous amount of pleasure that I welcome you to this momentous occasion. The 30-year anniversary of Committee on Human Systems Integration (COHSI) (formerly the Committee on Human Factors) celebrates the longevity and maturation of what was once considered to be an emerging field of endeavor. Few committees survive for such an extended period of time. This is a testament to the role that human-systems integration plays in society. Human-systems integration continues to define the successful development and evolution of both simple and complex systems whether they are a product, organization, physical, or software system.

Not only does this occasion mark the historical relevance of the field, it also celebrates the field's positioning for even greater impact in the years to come. I hope you enjoy the celebration as we look forward to even greater challenges and success in the future.

With sincerest regards,

William S. Marras, Ph.D., NAE
Chair, Committee on Human-Systems Integration
Honda Endowed Chair in the Department of Integrated Systems Engineering
The Ohio State University

COMMITTEE ON HUMAN-SYSTEMS INTEGRATION
A Celebration of 30 Years of Human-Systems Integration at the NRC (1980-2010)
NATIONAL RESEARCH COUNCIL
National Press Club
The Murrow, White, and Lisagor Rooms

DECEMBER 2, 2010

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1. AGENDA

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

Division of Behavioral and Social Sciences and Education
Committee on Human-Systems Integration

500 Fifth Street, NW
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NATIONAL RESEARCH COUNCIL
National Press Club
(The Murrow, White, and Lisagor Rooms)

AGENDA
Thursday, December 2, 2010

10:00 a.m.	*Welcome and Introductions* Barbara Wanchisen, COHSI Director William Marras, COHSI Chair
10:10 a.m.	*History of COHSI, from 1980-2010:* A panel discussion Former Chairs: Richard Pew, Thomas Sheridan, Doug Harris, Raymond Nickerson, William Rouse, & Raja Parasuraman William Marras, Current Chair and Moderator
10:55 a.m.	*Special Announcement* Robert Hauser, Interim Executive Director – DBASSE
11:00 a.m.	*People, Technology, Organizations and Culture: No Wonder Human-Systems Integration Is Difficult* Donald Norman, Nielsen Norman Group, Presenter Jonathan Grudin, COHSI member, Moderator of Session and Q&A
12:00 p.m.	*Working Lunch to Discuss Morning Presentations: All Attendees Invited*
1:00 p.m.	*Maintaining Human Behavioral Capability: Where Biology Meets Technology* David Dinges, University of Pennsylvania School of Medicine, Presenter William Marras, Moderator of Session and Q&A
2:00 p.m.	*A Federal Perspective on Human-Systems Integration Impacts and Future Needs* Terry Allard, Office of Naval Research Dylan Schmorrow, Office of the Secretary of Defense John Lockett, Army Research Labs Kerm Henriksen, Agency for Healthcare Research and Quality Teresa Zayas Caban, Agency for Healthcare Research and Quality William Marras, Moderator
3:30 p.m.	*Introducing Health Care to Human Factors* Lucian Leape, Harvard University School of Public Health Thomas Sheridan, Moderator of Session and Q&A
4:30 p.m.	*Closing Comments* Barbara Wanchisen
4:40 p.m.	Wine and Cheese Reception for all Attendees

Meetings and activities of COHSI are sponsored by:
Agency for Healthcare Research and Quality; Human Factors and Ergonomics Society; American Psychological Association, Division 21, Applied Experimental & Engineering Psychology; Office of Naval Research; US Air Force Research Laboratory; US Army Research Laboratory; National Institute on Disability and Rehabilitation Research; Federal Aviation Administration

2. SPEAKERS

COMMITTEE ON HUMAN-SYSTEMS INTEGRATION
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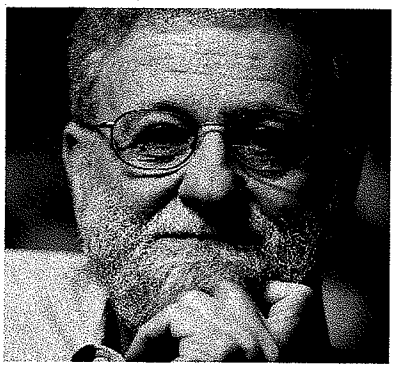
Keynote Speakers' Biographies



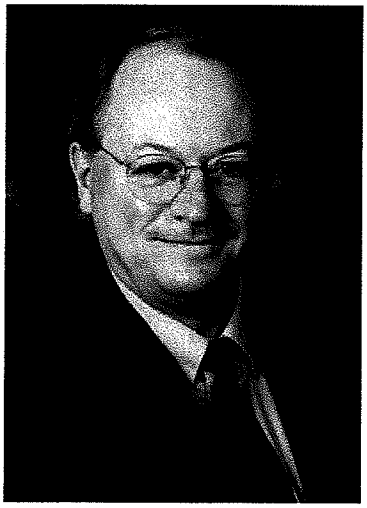
Donald Norman is a leader in the application of human-centered design. *Business Week* has listed him as one of the world's 27 most influential designers. "All design," says Norman, "whether of a product, a company, a service or an experience is ultimately aimed at satisfying human and societal needs." This approach requires the application of knowledge of cognitive science, engineering, and business with the skills and knowledge of the design field, helping companies produce products and services that satisfy human and societal needs, both practical and emotional.

Dr. Norman is cofounder of the Nielsen Norman Group, an executive consulting firm that helps companies produce human-centered products and services. Norman serves as advisor and board member to numerous companies and non-profit organizations in the area of policy and education. He is also Distinguished Visiting Professor at KAIST, the Korea Advanced Institute of Science and Technology, in the Department of Industrial Design.

As a consultant to industry, Dr. Norman brings a unique mix of the social sciences and engineering to bear on everyday products. He is cofounder of the Nielsen Norman Group, an executive consulting firm that helps companies produce human-centered products and services. He has been Vice President of Apple in charge of the Advanced Technology Group and an executive at Hewlett Packard. He was President of the Learning Systems division of *UNext*, a distance education company. He is a fellow of numerous scientific societies.

Her serves on numerous company boards and advisory board and is a fellow of many organizations, including the American Academy of Arts and Sciences. He has received the Benjamin Franklin Medal in Computer & Cognitive Science from the Franklin Institute (Philadelphia), honorary degrees from the University of Padova (Italy) and the Technical University of Delft (the Netherlands), the "Lifetime Achievement Award" from SIGCHI, the professional organization for Computer-Human Interaction, the Mental Health award for contributions to Business from Psychology Today, and the Taylor Award for outstanding contribution to the field of Applied Experimental and Engineering Psychology from the American Psychological Association.

He is well known for his books *"The Design of Everyday Things" and "Emotional Design."* *Business Week* called *The Invisible Computer* "the bible of the "post PC thinking." *"The Design of Future Things,"* discusses the role that automation plays in such everyday places as the home, and automobile. His book, *"Living with Complexity,"* will be published in September, 2010. He lives at www.jnd.org.

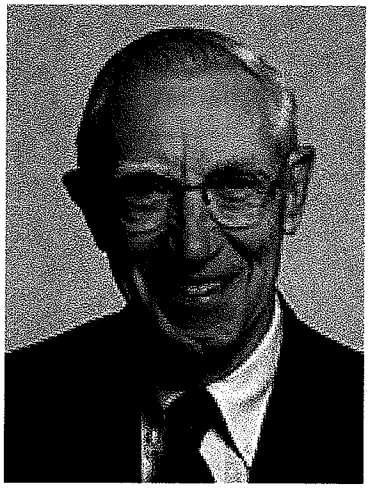


David Dinges is a Professor of Psychology in Psychiatry, Chief of the Division of Sleep and Chronobiology, and Director of the Unit for Experimental Psychiatry in the Department of Psychiatry at the University of Pennsylvania School of Medicine. A tenured professor with more than 250 scholarly publications, Dr. Dinges is also Vice Chair of Psychiatry for Faculty Affairs and Professional Development, Associate Director of Penn's Center for Sleep and Circadian Neurobiology, a member of Penn's Institute for the Translational Medicine and Therapeutics, Comprehensive Neuroscience Center, the Center for Functional Neuroimaging, and the Penn Genomics Frontiers Institute, as well as the Psychology Graduate Group. Dr. Dinges is also an Adjunct Professor in the School of Biomedical Engineering, Science Health Systems and Drexel University.

Dr. Dinges' research focuses on biological, behavioral, cognitive and psychological effects of fatigue and stress from life style, work demands, sleep loss, and disturbances of circadian biology. He has conducted extensive scientific work on development and validation of behavioral, technological, and biological interventions for these effects to promote human health and safety. In addition to his extensive laboratory research, Dr. Dinges conducts research in simulators and operational environments, including extensive research for NASA and the U.S. space program. He is currently measuring astronaut performance on the International Space Station, and in a 520-day space flight simulation in Russia. During the past 30 years, his research has been continuously supported by major grants from NIH, NASA, the National Space Biomedical Research Institute, Department of Defense, and other Federal agencies.

Dr. Dinges has served on an NIH Advisory Council, been President of both the U.S. Sleep Research Society and the World Federation of Sleep Research and Sleep Medicine Societies, and he has served on the Board of Directors of the American Academy of Sleep Medicine and the National Sleep Foundation. He is presently Editor-in-Chief of *SLEEP*, the leading scientific journal on sleep research and sleep medicine in the world. He has served on Institute of Medicine Committees—including the IOM committee on resident duty hours. He lectures at the National Transportation Safety Board Academy, and has advised a large number of both federal and private entities in the U.S. and abroad on scientific evidence for regulatory policies regarding duty hours and fatigue management. He has directed a congressionally mandated Center of Research Excellence for the Air Force Office of Scientific Research, and for the past 10 years he has led the Neurobehavioral and Psychosocial Factors Team for the NASA funded National Space Biomedical Research Institute.

He has received numerous awards, including the 2001 Senator Mark O. Hatfield Public Policy Award from the American Academy of Sleep Medicine; the 2004 Decade of Behavior Research Award from the American Psychological Association; the 2007 NASA Distinguished Public Service Medal, which is the highest honor NASA awards to a non-Government employee; and the 2009 Raymond F. Longacre Award for Outstanding Accomplishment in the Psychological and Psychiatric Aspects of Aerospace Medicine from the Aerospace Medical Association.



Lucian Leape is an Adjunct Professor of Health Policy in the Department of Health Policy and Management at the Harvard School of Public Health. Prior to joining the faculty at Harvard in 1988, he was Professor of Surgery and Chief of Pediatric Surgery at Tufts University School of Medicine and the New England Medical Center. Dr. Leape is internationally recognized as a leader of the patient safety movement, starting with the publication in JAMA of his seminal article, *Error in Medicine*, in 1994. His subsequent research demonstrated the success of the application of systems theory to the prevention of adverse drug events, and recently has focused on changing systems, assessing physician performance, and communicating with patients after adverse events. He has published 125 papers on quality of care and patient safety.

He has been an outspoken advocate of the nonpunitive systems approach to the prevention of medical errors and he has talked and written widely about the need to make patient safety a national priority. He has testified many times before Congress and served on various public and private organizational boards and committees. Dr. Leape was one of the founders of the National Patient Safety Foundation, the Massachusetts Coalition for the Prevention of Medical Error, and the Harvard Kennedy School Executive Session on Medical Error. He was a member of the Institute of Medicine's Quality of Care in America Committee, which published "To Err is Human" in 1999 and "Crossing the Quality Chasm" in 2001.

Recent honors include the Distinguished Service Award of the American Pediatric Surgical Association, the Donabedian Award from the American Public Health Association, a Robert Wood Johnson Foundation Investigator's Award in Health Policy Research, and honorary fellowship in the Royal College of Physicians and Surgeons of Canada. In 2003 he received the duPont Award for Excellence in Children's Health Care, and in 2004, the John Eisenberg Patient Safety Award from the JCAHO and National Quality Forum. In 2006, Modern Healthcare named him as one of the 30 people who have had the most impact on healthcare in the past 30 years. In 2007, the National Patient Safety Foundation established the Lucian Leape Institute to further strategic thinking in patient safety.

Dr Leape is a graduate of Cornell University and Harvard Medical School. He trained in surgery at the Massachusetts General Hospital and in pediatric surgery at Boston Children's Hospital.

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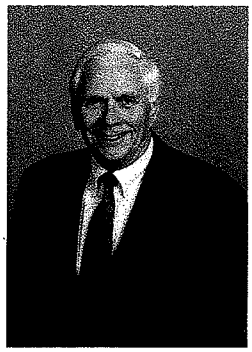
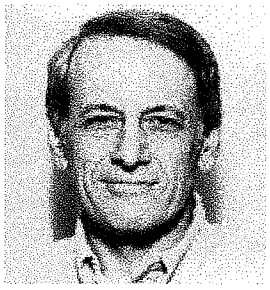
History of COHSI from 1980-2010 Panelist Biographies



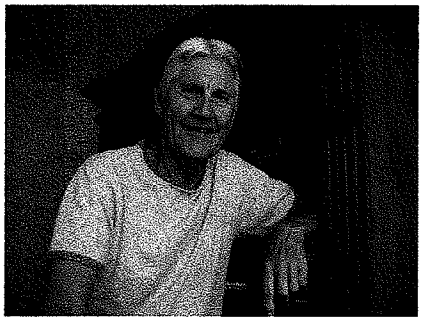
Richard W. Pew, Ph.D.
Committee on Human Factors Chair, 1980 - 1984

Dr. Richard Pew is Principal Scientist at Raytheon BBN Technologies, in Cambridge Massachusetts, currently part-time. He holds a bachelors degree in Electrical Engineering from Cornell University (1956), a master of arts degree in Psychology from Harvard University (1960) and a PhD in Psychology with a specialization in Engineering Psychology from The University of Michigan (1963). He has 50 years of experience in human factors, human performance and experimental psychology as they relate to systems design and development. Throughout his career he has been involved in the development and utilization of human performance models and in the conduct of experimental and field studies of human performance in applied settings. He spent 11 years on the faculty of the Psychology Department at Michigan where he was involved in human performance teaching, research and consulting before moving to BBN in 1974. He has been President of the Human Factors Society and President of Division 21 of the American Psychological Association, the division concerned with engineering psychology. He has also been chairman of the Biosciences Panel of the Air Force Scientific Advisory Board. In 1999, he was awarded the Arnold M. Small President's Distinguished Service Award, of the Human Factors and Ergonomics Society. Dr. Pew has more than 100 publications as books, book chapters, articles and technical reports.



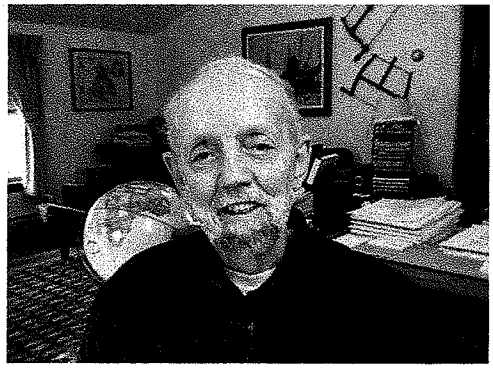
Thomas B. Sheridan, Ph.D., NAE
Committee on Human Factors Chair, 1984 – 1988

Dr. Thomas Sheridan (NAE) is Ford Professor of Engineering and Applied Psychology Emeritus, in the Department of Mechanical Engineering and Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology. A member of the National Academy of Engineering, he has served on numerous NRC, government and industrial advisory committees and several editorial boards. He has also served as a visiting professor at University of California Berkeley, Stanford, Delft University in the Netherlands (from which he received an honorary doctorate), Kassel University in Germany, and Ben Gurion University in Israel. He was president and is a Fellow of the IEEE Systems, Man, and Cybernetics Society, received their Norbert Wiener and Joseph Wohl awards and Third Millennium Medal. He was also president and is a Fellow of the Human Factors and Ergonomics Society, recipient of their Paul M. Fitts and President's Distinguished Service Awards. He also received the National Engineering Award of the American Association of Engineering Societies and the the Oldenburger Medal of ASME. Sheridan authored or edited five books on human performance modeling, telerobotics and human-automation interaction. Currently he a senior research fellow for the US Department of Transportation Volpe Center.



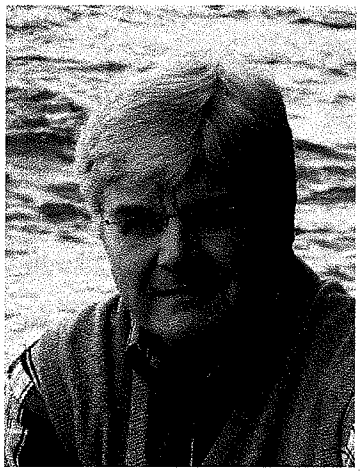
Douglas H. Harris, Ph.D.
Committee on Human Factors Chair, 1988 - 1991

Dr. Douglas Harris is Chairman and Principal Scientist at Anacapa Sciences, Inc., a company formed in 1969 to improve human performance in complex systems and organizations. After attending 24 schools throughout the United States, Doug left home (a trailer house) at age 13 to further his education. Later, between receiving his BS at Iowa State in 1952 and his PhD from Purdue in 1959, he was a gunnery officer aboard a destroyer in Korea, completed underwater demolition team training, was operations officer of UDT (SEAL) Team 11 in Asia, worked in marketing for Procter and Gamble, and spent four months touring Europe in an Austin-Healey. He has been a member and fellow of the Human Factors and Ergonomics Society since 1960, serving as president in 1984. As an Associate Editor of *Human Factors*, he edited special issues on industrial systems (1969) and civil systems (1975); he is currently Series Editor and Editor of Volume 6 of *Reviews of Human Factors and Ergonomics.* He has received the Society's Jack Kraft Innovator Award (1975), Best Ergonomics in Design Article Award (2003), and the Arnold M. Small President's Distinguished Service Award (2003). For the National Research Council, he has chaired or served on committees, panels or boards on organizational productivity, commercial aviation security, airline passenger screening, soldier systems, Army Research Laboratory technical assessment, and analysis of communicated threats against public officials.



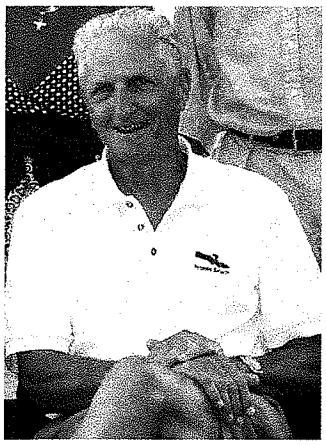
Raymond S. Nickerson, Ph.D.
Committee on Human Factors Chair, 1991 - 1994

Dr. Raymond Nickerson is a research professor in the Department of Psychology at Tufts University. He is a former senior vice president of Bolt Beranek and Newman Inc., from which he is retired. His Ph.D., in experimental psychology, is from Tufts University. He is a fellow of the American Association for the Advancement of Science, the American Psychological Association, the Association for Psychological Science, the Human Factors and Ergonomics Society and the Society of Experimental Psychologists. A past chair of the National Research Council's Committee on Human Factors, and a recipient of the Franklin V. Taylor Award from the American Psychological Association, he was the founding editor of *The Journal of Experimental Psychology: Applied* and of *Reviews of Human Factors and Ergonomics*, an annual publication of the Human Factors and Ergonomics Society. Dr. Nickerson's research interests include cognition, human factors and applied experimental psychology. His recent work at Tufts has focused primarily on probabilistic reasoning.



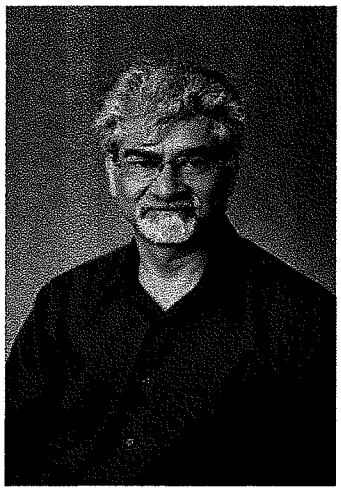
William B. Rouse, Ph.D., NAE
Committee on Human Factors Chair, 1994 – 1997

Dr. Bill Rouse is the Executive Director of the Tennenbaum Institute at the Georgia Institute of Technology. This university-wide center pursues a multi-disciplinary portfolio of initiatives focused on research and education to provide knowledge and skills that enable fundamental change of complex organizational systems. He is also a professor in the College of Computing and School of Industrial and Systems Engineering. Dr. Rouse has written hundreds of articles and book chapters, and has authored many books, including most recently *People and Organizations: Explorations of Human-Centered Design* (Wiley, 2007). He is a member of the National Academy of Engineering and has been elected a fellow of four professional societies -- Institute of Electrical and Electronics Engineers (IEEE), the International Council on Systems Engineering (INCOSE), the Institute for Operations Research and Management Science, and the Human Factors and Ergonomics Society. He has received the Joseph Wohl Outstanding Career Award and the Norbert Wiener Award from the IEEE Systems, Man, and Cybernetics Society; a Centennial Medal and a Third Millennium Medal from IEEE; the Best Article Award from INCOSE, and the O. Hugo Schuck Award from the American Automation Control Council. Dr. Rouse received his B.S. from the University of Rhode Island, and his S.M. and Ph.D. from the Massachusetts Institute of Technology.



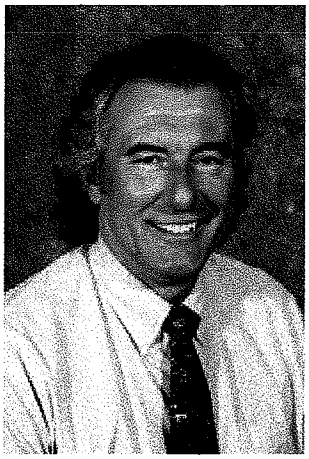
William C. Howell, Ph.D.
Committee on Human Factors Chair, 1998 – 2000
Not in attendance

Dr. William Howell is currently retired but holds Adjunct Professorships at both Arizona State and Rice Universities. After earning his doctorate in 1958 from the University of Virginia, he joined the Aviation Psychology Laboratory at Ohio State University, eventually serving as its Director and holding a professorship in the OSU psychology department. In 1968 he moved to Rice University where he was instrumental in establishing the doctoral-level psychology department that he chaired for 17 years. On leave from Rice, he served as Chief Scientist for Human Resources for the USAF from 1989-92, and following that, was appointed Executive Officer for Science of the American Psychological Association (APA)— a position he held until his retirement in 1997. His research, mostly on topics in human performance and engineering psychology, has resulted in over 150 archival publications, and he has served on the editorial boards of ten journals. He has held a variety of elected offices in the profession including President of the Human Factors and Ergonomics Society, and has served by appointment on over thirty advisory boards and committees, including the Board of Directors of the American Psychological Foundation and the National Research Council (NRC) Division of Behavioral and Social Sciences and Education (both current), and the Technical Advisory Board for the Navy's TADMUS program, which he chaired.



Raja Parasuraman, Ph.D.
Committee on Human Factors Chair, 2001 - 2005

Dr. Raja Parasuraman is University Professor of Psychology at George Mason University, Fairfax, VA. He is Director of the Graduate Program in Human Factors and Applied Cognition and Chair of the Neuroimaging Core of the Krasnow Institute (NICKI). Previously he held appointments as Professor and Associate Professor of Psychology at The Catholic University of America, Washington DC from 1982 to 2004. He received a B.Sc. (1st Class Honors) in Electrical Engineering from Imperial College, University of London, U.K. (1972) and a Ph.D. in Psychology from Aston University, Birmingham, U.K. (1976). Dr. Parasuraman has merged his interests in functional brain imaging and molecular genetics of cognition by developing the field of *neuroergonomics*, which he defines as the study of brain and behavior at work. Dr. Parasuraman was elected a Fellow of the American Association for the Advancement of Science (1994), the American Psychological Association (1991), the American Psychological Society (1991), the Human Factors and Ergonomics Society (1994), the International Ergonomics Association (2006), and a National Associate of the National Academy of Sciences (2001).



William S. Marras, Ph.D., NAE
Committee on Human-Systems Integration Chair, 2006 – present

Dr. William Marras (NAE) holds the Honda Endowed Chair in the Department of Industrial, Welding and Systems Engineering at the Ohio State University. He is also the director of the Biodynamics Laboratory and holds adjunct appointments in the Departments of Orthopedic Surgery, Department of Physical Medicine, and Biomedical Engineering. Professor Marras is the Executive Director of the Ohio State University Institute for Ergonomics and serves as director of the Center for Occupational Health in Automotive Manufacturing (COHAM). His research applies quantitative engineering techniques to occupational surveillance, laboratory studies, and mathematical modeling where he explores the occupational causality of low back pain as well as techniques for the clinical assessment and treatment of low back pain. Professor Marras' findings have been published in over 185 peer reviewed journal articles and numerous book chapters. He serves as Deputy Editor for the journals Spine and Human Factors. He was recently awarded an honorary Doctor of Science degree from the University of Waterloo for his work on the biomechanics of low back disorders. He is a fellow of the American Institute of Medical and Biological Engineers, the Human Factors and Ergonomics Society, the International Ergonomics Association, and the Ergonomics Society. Professor Marras has just published a new book entitled "The Working Back: A systems view." In 2009 Dr. Marras was elected to the National Academy of Engineering.

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A Federal Perspective on Human-System Integration **Panelist Biographies**

Terry Allard, Ph.D., leads the planning and execution of Office of Naval Research (ONR) Warfighter Performance Science and Technology (S&T) overseeing a broad research portfolio including human systems integration, operational health and bioengineered systems. He creates and implements the vision, strategic direction, advocacy and oversight of over 350 research & technology development projects and over $180million (FY09) of 6.1, 6.2 and 6.3 budgets annually. He is also responsible for ensuring the safety and privacy of human subjects in Navy and Marine Corps research studies. Dr. Allard received a Ph.D. in psychology and brain science from Massachusetts Institute of Technology with a focus on human neuropsychology, speech sciences, phonology and psychophysics. He did postdoctoral work in animal behavior and the neurophysiology of learning, memory and self-organizing systems at the University of California, San Francisco. Dr. Allard's professional awards include Naval Civilian Meritorious Service Medal; NASA Outstanding Leadership Medal; NASA Group Achievement Award for Exploration Systems Research and Technology; and Hammer Award for Reinventing Government from the Office of the Vice President as a member of the Smart Ship team among other awards. He was invited to join the Phi Beta Kappa Honor Society, the Sigma Xi Scientific Research Society and the Psi Chi National Honor Society in Psychology. He was awarded the David D. Henry Award as outstanding graduate of his Wayne State University graduating class. He has been a member of the Society for Neuroscience, the American Institute of Aeronautics and Astronautics, the American Association for the Advancement of Science. He is a current member of the American Society of Naval Engineers and the Human Factors and Ergonomics Society.

Kerm Henriksen, Ph.D., is an experimental psychologist and currently serves as a Human Factors Advisor for Patient Safety at the Agency for Healthcare Research and Quality (AHRQ). In addition to managing a number of contracts and grants that address various patient safety research issues, Dr Henriksen managed the Patient Safety Research Coordinating Center, responsible for coordinating activities, fostering collaborations, and supporting dissemination efforts of a large and diverse collection of patient safety researchers. He also served as associate editor to the *Journal of Patient Safety,* lead editor of two AHRQ four-volume publications, *Advances in Patient Safety: From Research to Implementation* and *Advances in Patient Safety: New Directions and Alternative Approaches,* and sits on the advisory boards of several associations initiating patient safety and quality efforts. Dr. Henriksen also serves as Adjunct Professor in the Graduate School of Management and Technology at the University of Maryland, University College.

John Lockett, is chief of the Integration Methods Branch at the US Army Research Laboratory, Human Research and Engineering Directorate. Mr. Lockett received a Masters in Industrial and Systems Engineering from Virginia Tech and a Bachelor of Science in Engineering Psychology from Tufts University. He has over 25 years research and development experience in human factors and has concentrated on application of workload analysis and human figure modeling technologies to MANPRINT, the US Army's human systems integration program. During that

period, he managed projects relating to development of physical and workload modeling tools. This includes the Army's portion of the Jack human figure model, the WinCrew workload and task analysis tool, and Improved Performance Research Integration Tool (IMPRINT). Mr. Lockett has served as an Army sponsor of the Committee on Human Systems Integration for the last 20 years.

Captain Dylan Schmorrow, Ph.D, is a U.S. Naval Officer in the Navy's Medical Service Corps and has been appointed by the Navy Surgeon General as the Specialty Leader of the Aerospace Experimental Psychologist Community. He is also an Acquisition Professional in the Naval Acquisition Corps and is currently serving in the Office of the Director, Defense Research and Engineering as the Acting Director for BioSystems with purview over the defense technology areas of human performance, medical, man-machine systems, training, civil engineering, environmental quality, and chemical and biological defense. His responsibilities include providing technical leadership, management oversight, policy guidance, and coordination for over $2 billion in research and engineering programs in the DoD to ensure that these areas are focused, relevant and quality efforts capable of satisfying current and anticipated defense needs. Dr. Schmorrow earned his Doctor of Philosophy in Experimental Psychology from the Western Michigan University in 1993 and received his commission in the U.S. Navy the same year, completing naval flight training in 1994. He has authored over fifty scientific publications, lectured internationally in fifteen countries, and edited ten professional journals and books. He is a recipient of the Navy's Top Scientists and Engineers Award, as well as both the Society of U.S. Naval Flight Surgeons' Sonny Carter Memorial Award for his contributions to improve the health, safety and welfare of military operational forces and the Human Factors and Ergonomics Society's Leland S. Kollmorgen Spirit of Innovation Award for his contributions to operational neuroscience that led to the founding of the field of Augmented Cognition. His military decorations include the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal (3), Navy Commendation Medal, Navy Achievement Medal, Armed Forces Service Medal & NATO Medal.

Teresa Zayas Cabán, Ph.D., serves as senior manager for health information technology (health IT) at the Agency for Healthcare Research and Quality. Dr. Zayas Cabán leads the Enabling Patient-Centered Care through Health IT grant initiative. She also manages several contracts focused on workflow and on the design and implementation of health IT and its impact to consumers. Dr. Zayas Cabán completed her doctoral training at the University of Wisconsin-Madison where she was a National Science Foundation Graduate Research Fellow in industrial engineering. Her dissertation work focused on the development of a methodology that captures the location and distribution of health information in the home. The methodology can be used to obtain design requirements for the development of in-home consumer health informatics applications. Her interests include how to apply human factors engineering concepts in the home environment, how to capture home health information management work, and access to care. While pursuing her doctoral degree, she worked with Partners HealthCare Clinical Informatics Research and Development, Boston Children's Hospital Informatics Program, and the Dana-Farber/Harvard Cancer Center (DF/HCC)'s Cancer Care in Massachusetts (CAMA) project. Before joining AHRQ, she served as a post-doctoral trainee in the Computation and Informatics in Biology and Medicine program in Wisconsin examining the informed-consent process for health research projects to discover factors that influence the quality of decisions made by potential participants about whether or not to participate in a study.

3. COHSI Overview

COMMITTEE ON HUMAN-SYSTEMS INTEGRATION
A Celebration of 30 Years of Human-Systems Integration at the NRC (1980-2010)

An Overview of COHSI

The National Research Council's Committee on Human-Systems Integration was established in October 1980 by the Commission on Behavioral and Social Sciences and Education of the National Research Council. It was previously known as the Committee on Human Factors. Since its inception, the committee has issued thirty-five reports regarding human factors applications, the state of knowledge, and research needs on topics deemed important by the committee and its sponsors. Major project areas recently covered by committee studies and workshops include the scientific and technological challenges of virtual reality, the future of air traffic control, the effects of musculoskeletal disorders in the workplace, human factors in the design of tactical displays, modeling human and organizational behavior for application to military simulations, modeling social networks, modeling the behavior of individuals and organizations, and human systems integration and system development.

The Committee provides new perspectives on theoretical and methodological issues concerning the relationship of individuals and organizations to technology and the environment, identifies critical issues in the design, test, evaluation, and use of new human-centered technologies, and advises sponsors on the research needed to expand the scientific and technical bases for designing technology to support the needs of its users. The Committee also provides a formal and regular forum for sponsors to talk with each other and with a knowledgeable body of experts. Committee member expertise covers a wide range of areas including human factors engineering, cognitive psychology, industrial and organizational psychology, sociology, biomechanics, computer science, decision making, training, and technology.

COMMITTEE ON HUMAN-SYSTEMS INTEGRATION
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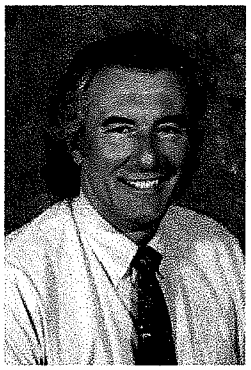
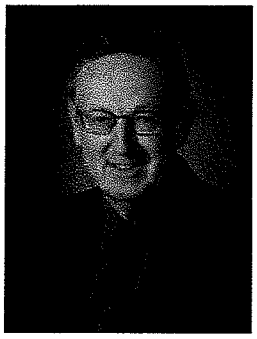
Committee Member Biographies



William S. Marras, NAE (chair) is a professor and holds the Honda Endowed Chair in the Department of Industrial, Welding and Systems Engineering at the Ohio State University. He is also the director of the Biodynamics Laboratory and holds adjunct appointments in the Departments of Orthopedic Surgery, Department of Physical Medicine, and Biomedical Engineering. Professor Marras is the Executive Director of the Ohio State University Institute for Ergonomics and serves as director of the Center for Occupational Health in Automotive Manufacturing (COHAM). His research applies quantitative engineering techniques to occupational surveillance, laboratory studies, and mathematical modeling where he explores the occupational causality of low back pain as well as techniques for the clinical assessment and treatment of low back pain. Professor Marras' findings have been published in over 185 peer reviewed journal articles and numerous book chapters. He serves as Deputy Editor for the journals Spine and Human Factors. He was recently awarded an honorary Doctor of Science degree from the University of Waterloo for his work on the biomechanics of low back disorders. He is a fellow of the American Institute of Medical and Biological Engineers, the Human Factors and Ergonomics Society, the International Ergonomics Association, and the Ergonomics Society. Professor Marras has just published a new book entitled "The Working Back: A systems view."

Deborah Boehm-Davis is university professor and chair of the Psychology Department at George Mason University. She has a Ph.D. on cognitive psychology from the University of California, Berkeley. She has worked on applied cognitive research at General Electric, NASA Ames, and Bell Laboratories. Dr. Boehm-Davis' focus is on how human performance is helped or hindered by the design of tools, and she has a particular interest in how improved display of information can improve human performance. She is currently most interested in improving pilot performance and in understanding how to minimize the disruptive effects of interruptions.

Pascale Carayon is Procter & Gamble Bascom Professor in Total Quality and Associate Chair in the Department of Industrial and Systems Engineering and the Director of the Center for Quality and Productivity Improvement (CQPI) at the University of Wisconsin-Madison. She leads the *Systems Engineering Initiative for Patient Safety (SEIPS)* at the University of Wisconsin-Madison (http://cqpi.engr.wisc.edu/seips_home). She received her Engineer diploma from the Ecole Centrale de Paris, France, in 1984 and her Ph.D. in Industrial Engineering from the University of Wisconsin-Madison in 1988. Her research examines systems engineering, human factors and ergonomics, sociotechnical engineering and occupational health and safety, and has been funded by the Agency for Healthcare Research and Quality, the National Science Foundation, the National Institutes for Health (NIH), the National Institute for Occupational Safety and Health, the Department of Defense, various foundations and private industry. She is the North American editor for *Applied Ergonomics*, and a member of the editorial boards of the *Journal of Patient Safety*, *Behaviour and Information Technology*, and *Work and Stress*. She is a Fellow of the Human Factors and Ergonomics Society and the International Ergonomics Association. Between 2006 and 2009 she was the Secretary General of the International Ergonomics Association. Dr. Carayon was a member of the IOM Committee on Optimizing Graduate Medical Trainee (Resident) Hours and Work Schedules to Improve Patient Safety. She is the editor of the *Handbook of Human Factors and Ergonomics in Health Care and Patient Safety*.



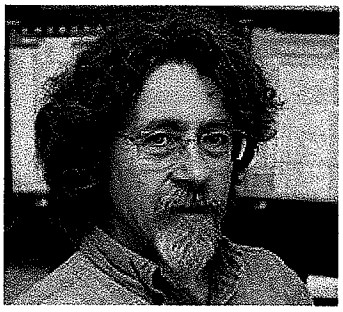
Donald Chaffin, NAE is the R.G. Snyder Distinguished University Professor (Emeritus) in Industrial and Operations Engineering, Biomedical Engineering, and Environmental Health Sciences at the University of Michigan. Dr. Chaffin received his B.S. in Industrial Engineering from GMI (now Kettering University) in 1962, his M.S. in IE from the University of Toledo in 1964, and his Ph.D. in Industrial Engineering from the University of Michigan in 1967. His research has resulted in six books, over 140 peer reviewed journal articles, and over 300 Proceedings, book chapters and reports. He and his graduate students and staff have developed a set of widely used software programs to assist engineers who are involved in designing workplaces and vehicles to accommodate various groups of people, and to assure that people do not suffer overexertion injuries during the performance of manual tasks of all kinds. In 1998 he founded and directed the Human Motion Simulation Laboratory in the Center for Ergonomics until his retirement in 2007. His work has resulted in his election to Fellow status in seven different international, professional and scientific organizations, and in 1994 he was elected to the National Academy of Engineering. He has received many national and international awards for his teaching, research and service, including the 2008 National Engineering Award from the American Association of Engineering Societies, for his lifetime achievements and leadership in the field of ergonomics.

Nancy J. Cooke is a professor of Applied Psychology at Arizona State University and is Science Director and on the Board of Directors of the Cognitive Engineering Research Institute in Mesa, AZ. Dr. Cooke is also Editor-in-Chief of *Human Factors* and serves on the Air Force Scientific Advisory Board. Dr. Cooke received a B.A. in psychology from George Mason University and received her M.A. and Ph.D. in cognitive psychology in 1983 and 1987, respectively from New Mexico State University. Currently, she supervises post doctoral, graduate and undergraduate research on team cognition with applications in design and training for military command-and-control systems, emergency response, medical systems, and uninhabited aerial systems. In particular, Dr. Cooke specializes in the development, application, and evaluation of methodologies to elicit and assess individual and team cognition. Her most recent work includes the development and validation of methods to measure team coordination, team communication and team situation awareness and research on the relation between these constructs and team effectiveness. Dr. Cooke is the 2006 recipient of the Human Factors and Ergonomics Society's O. Keith Hansen Outreach Award.

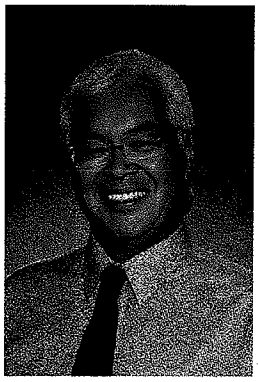
Mary (Missy) Cummings received her B.S. in Mathematics from the United States Naval Academy in 1988, her M.S. in Space Systems Engineering from the Naval Postgraduate School in 1994, and her Ph.D. in Systems Engineering from the University of Virginia in 2003. A naval officer and military pilot from 1988-1999, she was one of the Navy's first female fighter pilots. She is currently an Associate Professor in the Aeronautics & Astronautics Department at the Massachusetts Institute of Technology. Her previous teaching experience includes instructing for the U.S. Navy at Pennsylvania State University and as an assistant professor for the Virginia Tech Engineering Fundamentals Division. Her research interests include human interaction with autonomous vehicle systems, modeling human interaction with complex systems, decision support design for time-pressured, uncertain systems, and the ethical and social impact of technology. Dr. Cummings was a member of the DEPS Committee on Opportunities in Neuroscience for Future Army Applications.

Sara J. Czaja is professor in the Departments of Psychiatry and Behavioral Sciences and Industrial Engineering at the University of Miami. She is also the co-director of the Center on Aging at the University of Miami and the director of the Center on Research and Education for Aging and Technology Enhancement (CREATE). CREATE is funded by the National Institute on Aging and it involves collaboration with the Georgia Institute of Technology and Florida State University. The focus of CREATE is on making technology more accessible, useful, and usable for older adult populations. Dr. Czaja has extensive experience in aging research and a long commitment to developing strategies to improve the quality of life for older adults. Her research interests include: aging and cognition, caregiving, human-computer interaction, training, and functional assessment. Dr. Czaja is very well published in the field of aging and has written numerous book chapters and scientific articles. She recently co-authored a book with other members of

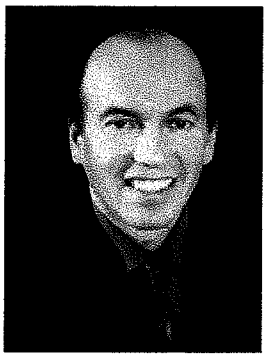
the CREATE team concerning the design of technology for older adult populations. In addition, she is fellow of the American Psychological Association, the Human Factors and Ergonomics Society, and the Gerontological Society of America. She is the past chair of the Risk Prevention and Behavior Scientific Review Panel of the National Institutes of Health.



Jonathan Grudin works in the Adaptive Systems and Interaction Group at Microsoft Research, part of the Microsoft Corporation. His work is solely in the research area and it focuses on human-computer interaction and computer supported cooperative work, with a particular emphasis on the design, adoption, and use of group support technologies. Prior to joining Microsoft Research, Dr. Grudin was professor of information and computer science at the University of California, Irvine. His interest is in the challenges in designing and using technology to support people in group and organizational settings, in which technology design, adoption, and use require attention to context.

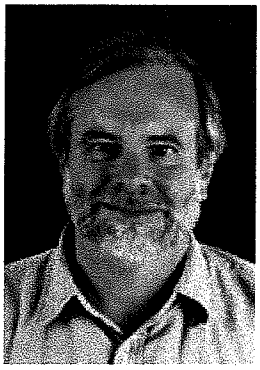


Andrew S. Imada is the president of the International Ergonomics Association, which represents 49 federated societies and networks and 25,000 ergonomists around the world. He is a specialist in human and organizational change and a Certified Professional Ergonomist. Dr. Imada was a professor of Ergonomics and Safety Sciences at the University of Southern California for 19 years. He also served as the director of the USC Safety Science Center and the International Distance Learning Liaison at the university's Center for Scholarly Technology. Dr. Imada won the 1998 Liberty Mutual Prize and the 2000 Liberty Mutual Medal in international competitions for occupational safety and ergonomics research. His work focuses on helping people and organizations change to improve productivity, safety, quality, and work systems. He was a visiting scholar at Luleå University in Sweden, teaching graduate courses on implementing participatory strategies for improving safety, ergonomics and productivity and has served on the Board of Consulting Editors for the *Journal of Applied Psychology*. He has served as a director on the Board of Certification in Professional Ergonomics and is a fellow of the Human Factors and Ergonomics Society and the International Ergonomics Association. Dr. Imada earned his Bachelor of Arts in psychology and business from the University of San Francisco and his masters and doctoral degrees from The Ohio State University in industrial and organizational psychology.

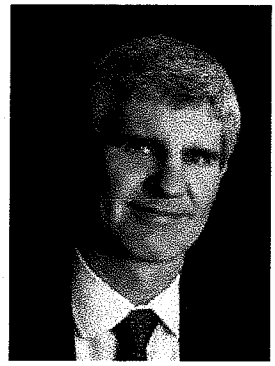


Waldemar Karwowski is professor and chair of the Department of Industrial Engineering and Management Systems at the University Central Florida. He also serves as Executive Director of the Institute for Advanced Systems Engineering at UCF. Dr. Karwowski received an M.S. (1978) in production engineering and management from the Technical University of Wroclaw, Poland, and a Ph.D. (1982) in industrial engineering from Texas Tech University. He was awarded D.Sc. degree in management science by the Institute for Organization and Management in Industry, Warsaw, Poland (June 2004). Dr. Karwowski also received honorary doctor of science degree from the South Ukrainian State Pedagogical University of Odessa, Ukraine (2004), and honorary doctor of engineering degrees from the Technical University of Kosice, Slovakia (2005), and Moscow State Institute of Radio, Electronics and Automation (MIREA Technical University), Russia, (2007). His research focuses on work system design and management, systems engineering and human-systems integration, human-computer interaction, prevention of work-related musculoskeletal disorders, and neuro-fuzzy modeling and fuzzy systems. Dr. Karwowski is co-editor of the Human Factors and Ergonomics in Manufacturing journal, and editor-in-chief of Theoretical Issues in Ergonomics Science (TIES).

Steve W. J. Kozlowski is a Professor of Organizational Psychology at Michigan State University. He received his Ph.D. from The Pennsylvania State University. Dr. Kozlowski's research is directed by a theoretical perspective that views organizations as dynamic systems of multilevel processes that link individuals and teams to the organization and which emerge and unfold over time. Dr. Kozlowski's research program is focused on three related facets of learning and adaptation in organizational systems: (1) active learning, self-regulatory processes, and simulation-based training; (2) team learning, multiple goal regulation, and adaptation; and (3) and the role of team leaders in the development of effective teams. The goal of this research is to generate actionable knowledge and tools to promote the development of adaptive individuals, teams, and organizations. Dr. Kozlowski is the Editor, and a former Associate Editor, for the *Journal of Applied Psychology* and has served on the Editorial Boards of the *Academy of Management Journal, Human Factors*, the *Journal of Applied Psychology*, and *Organizational Behavior and Human Decision Processes*. He is a Fellow of the American Psychological Association, the Association for Psychological Science, the International Association of Applied Psychology, and the Society for Industrial and Organizational Psychology.



Arthur Kramer is Swanlund Chair and Professor of Psychology and Neuroscience at the University of Illinois. He received his Ph.D. in Cognitive/Experimental Psychology from the University of Illinois in 1984. Professor Kramer's research projects include topics in Cognitive Psychology, Cognitive Neuroscience, Aging, and Human Factors. A major focus of his labs recent research is the understanding and enhancement of cognitive and neural plasticity across the adult lifespan. He is the Director of the Biomedical Imaging Center and Co-Director of the NIH Center for Healthy Minds. Professor Kramer served as an Associate Editor of *Perception and Psychophysics* and is currently a member of seven editorial boards. He is a fellow of the American Psychological Association, American Psychological Society, a member of the executive committee of the International Society of Attention and Performance, and a recent recipient of a NIH Ten Year MERIT Award. Professor Kramer's research has been featured in a long list of print, radio and electronic media including the *New York Times, Wall Street Journal, Washington Post, Chicago Tribune, CBS Evening News, Today Show, NPR* and *Saturday Night Live.*



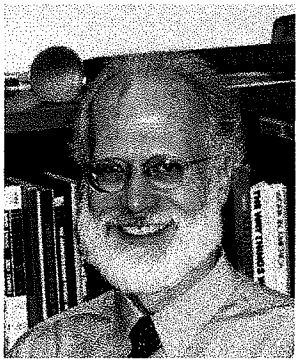
David Rempel is a professor of medicine at the University of California, San Francisco in the Division of Occupational Medicine as well as an associate professor of bioengineering at the University of California, Berkeley. He is a fellow of the American College of Occupational and Environmental Medicine, a fellow in the American College of Physicians, and a Certified Professional Ergonomist. Dr. Rempel has conducted studies of carpal tunnel syndrome among postal workers, VDT operators, grocery workers and plumbers. He is currently studying musculoskeletal disorders associated with keyboard and computer mice usage. He was an ergonomics consultant to Cal/OSHA from 1988 to 1990 and a member of Cal/OSHA's Ergonomics Expert Subcommittee. He is a member of the ANSI Z365 Committee (Control of Cumulative Trauma Disorders), the Human Factors and Ergonomics Society, and the Institute for Industrial Engineers.

Matthew Rizzo is Professor of Neurology, Engineering, and Public Policy, at the University of Iowa. He has an M.D. from Johns Hopkins University School of Medicine. He is the Vice Chair for Clinical/Translational Research, and Director if the Division of Neuroergonomics, its Visual Function and (SIREN) Laboratory and its instrumented vehicles, all in the Department of Neurology. His clinical interests and activities include behavioral neurology and cognitive neuroscience and memory disorders. His research interests include behavioral disturbances resulting from CNS injury, neural substrates of human vision (including attention and visuomotor control), aging and dementia, driving performance in neurological disease, and driving simulation. Dr. Rizzo is a member of the American Academy of Neurology, the American Neurological Association, and the Human Factors and Ergonomics Society, Society for Neuroscience, and the Vision Sciences Society.

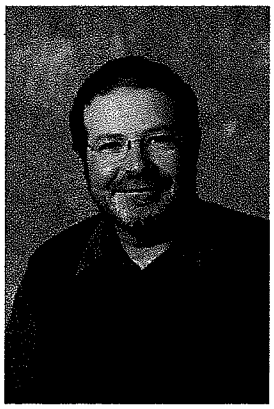
Thomas F. Sanquist is a research scientist with the Pacific Northwest National Laboratory, Seattle, WA, operated by Battelle for the US Department of Energy. His work focuses on the application of human factors methods and principles for designing and evaluating user interactions with complex systems. Application areas include security systems, intelligence analysis, transportation, imaging devices, satellite control systems, nuclear power plants, and military command and control. He has experience in both the research and practice of human factors engineering, having designed and implemented significant large-scale systems such as radiation portal monitoring for the Department of Homeland Security, and the Air Force satellite control network user interface. Selected areas of expertise include security systems, user interface design and evaluation, job/task analysis, work process/schedule design, hardware and software specifications, test and evaluation, and process improvement studies. Dr. Sanquist was a member of the National Research Council Committee on *Human-System Design Support for Changing Technology* (2005 – 2007), and currently serves on the NRC Soldier-Systems Panel (2007 – 2009). He is an Affiliate Professor in the Department of Psychology, University of Washington. He received a B.A. degree in psychology from the University of Michigan and a Ph.D. degree in cognitive and physiological psychology from UCLA.

Thomas B. Sheridan, NAE is Ford Professor of Engineering and Applied Psychology Emeritus, in the Department of Mechanical Engineering and Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology. A member of the National Academy of Engineering, he chaired the National Research Council's Committee on Human Factors, and has served on numerous other NRC, government and industrial advisory committees and several editorial boards. He has also served as a visiting professor at University of California Berkeley, Stanford, Delft University in the Netherlands (from which he received an honorary doctorate), Kassel University in Germany, and Ben Gurion University in Israel. He was president and is a Fellow of the IEEE Systems, Man, and Cybernetics Society, received their Norbert Wiener and Joseph Wohl awards and Third Millennium Medal. He was also president and is a Fellow of the Human Factors and Ergonomics Society, recipient of their Paul M. Fitts and President's Distinguished Service Awards. He also received the National Engineering Award of the American Association of Engineering Societies and the the Oldenburger Medal of ASME. His research interests are in experimentation, modeling, and design of human-machine systems in air, highway and rail transportation, space and undersea robotics, process control, arms control, telemedicine, and virtual reality. Sheridan authored or edited five books on human performance modeling, telerobotics and human-automation interaction. Currently he a senior research fellow for the US Department of Transportation Volpe Center.

Philip J. Smith is co-director of the Institute for Ergonomics and a professor with the industrial and systems engineering program, biomedical engineering, and the Advanced Computing Center for Arts and Design at The Ohio State University. He is a Fellow of the Human Factors and Ergonomics Society. Dr. Smith teaches courses in the areas of cognitive systems engineering, artificial intelligence, human-computer interaction and the design of cooperative problem-solving systems, intelligent information retrieval systems, and intelligent tutoring systems. His research focuses on issues concerned with design of cooperative problem-solving systems to support people in performing complex tasks such as information retrieval, planning, database exploration, teaching and diagnosis, using fields such as aviation, medicine, library systems and education as testbeds.



David H. Wegman is Professor Emeritus in the Department of Work Environment at the University of Massachusetts Lowell and Adjunct Professor at the Harvard School of Public Health and the University of Massachusetts Medical School. He was founding chair of the Department of Work Environment as well as Dean of the School of Health and Environment. He received his B.A. from Swarthmore College and both his M.D. and M.Sc. from Harvard University. Dr. Wegman's epidemiologic research includes study of acute and chronic occupational respiratory disease, occupational cancer risk and occupational musculoskeletal disorders with special interests in study of subjective outcomes as early indicators of health effects and in surveillance of occupational conditions and risks. He is a National Associate of the National Academies and has served on or chaired several Academy committees, most recently chairing the committees for Review of NIOSH Research Programs, the Role of Human Factors in Home Health Care, and the External Evaluation of the National Institute of Disability and Rehabilitation Research. Dr. Wegman chaired the MSHA Advisory Committee on the Elimination of Pneumoconiosis Among Coal Mine Workers and previously served on the Boards of Scientific Counselors for NIOSH and for the National Toxicology Program as well as on the EPA Science Advisory Board. In 2006, in response to a request initiated by the Swedish Parliament, he was appointed chair of the International Evaluation Group for an analysis of Occupational Health Research in Sweden. He is co-editor of Occupational and Environmental Health: Recognition and Prevention of Disease and Injury, the 6th edition of which will be published in 2010.



Howard M. Weiss is Professor and Department Head in the Department of Psychological Sciences at Purdue University. He has a Ph.D. in industrial/organizational psychology from New York University. Dr. Weiss' research focuses on understanding the causes and consequences of emotional experiences at work. Specifically, his research examines variation of emotional states at work, effects of immediate emotional states on job performance, and the cumulative effects of emotional experiences on job satisfaction and burnout. He also studies the effect of attentional focus on work performance. He is co-founder of the Military Family Research Institute at Purdue University and currently serves as a Senior Research Scientist. He is a Fellow of the Society for Industrial and Organizational Behavior and currently seves on the Society's Executive Committee. He is also a Fellow of the Association for Psychological Science and the American Psychological Association, where he is also a member of APA Council. His research has been funded by the Army Research Institute, the Office of Naval Research, the Department of Defense and the Spencer Foundation.

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Staff Biographies

Barbara A. Wanchisen, Ph.D., Senior Board Director
Barbara Wanchisen received a B.A. in English and Philosophy from Bloomsburg University in Pennsylvania, an M.A. in English from Villanova University, and her Ph.D. in experimental psychology from Temple University. She is a long-standing member of the Psychonomic Society, the Association for Behavior Analysis, and the American Psychological Association. In January 2004, she became a Fellow of Division 25 (Behavior Analysis) of the American Psychological Association. She has served on the editorial boards of the *Journal of the Experimental Analysis of Behavior* and *The Behavior Analyst* while also serving as a guest reviewer of a number of other journals. From November 2001 until April 2008, Wanchisen was the executive director of the Federation of Behavioral, Psychological, & Cognitive Sciences in Washington, DC. In 2004, she was instrumental in the founding of the Federation's Foundation for the Advancement of Behavioral and Brain Sciences, a non-profit organization that assumed the educational mission of the Federation. Previously, Wanchisen was Professor in the Department of Psychology and Director of the college-wide Honors Program at Baldwin-Wallace College, near Cleveland, Ohio.

Mary Ellen O'Connell, M.M.H.S., Deputy Board Director
Mary Ellen O'Connell has a B.A. (with distinction) from Cornell University and a Masters in the management of human services from the Heller School for Social Policy and Management at Brandeis University. She has served as study director for five consensus studies at the National Research Council: on prevention of mental disorders and substance abuse, international education and foreign languages, ethical considerations for research on housing-related health hazards involving children, reducing underage drinking, and assessing and improving children's health. She also served as study director for the Committee on Standards of Evidence and the Quality of Behavioral and Social Science Research, a DBASSE-wide strategic planning effort; developed standalone workshops on welfare reform and children and gun violence; and facilitated meetings of the national coordinating committee of the Key National Indicators Initiative. She came to DBASSE from the U.S. Department of Health and Human Services (HHS), where she spent eight years in the Office of the Assistant Secretary for Planning and Evaluation, most recently as director of state and local initiatives. Prior to HHS, she worked at the U.S. Department of Housing and Urban Development on homeless policy and program design issues and for the Commonwealth of Massachusetts as the director of field services.

Christie R. Jones, Program Associate
Christie Jones, a graduate of Bennett College with B.A. in International Relations, came to BBCSS and COHSI from the Executive Office of the National Academy, where she served as Meetings Associate for two years. She was responsible for the planning of the NAS Annual Meetings, NAS Regional meetings, and NAS Council Meetings. Prior to the National Academies, Christie worked in the meeting and event industry for nearly ten years for organizations such as American University, the US Holocaust Memorial Museum, and the International Association of Chiefs of Police. The daughter of a retired U.S. Ambassador, she grew up in the Dominican Republic, Costa Rica, Thailand, and Belgium. She is fluent in Spanish and conversant in French and Thai.

Cherie Chauvin, M.S., M.A., Program Officer
Cherie Chauvin joined BBCSS in 2008 as the Study Director for two studies involving national security. She possesses an MS in Strategic Intelligence from the National Defense Intelligence College (Washington, DC), an MA in International Relations from The Maxwell School at Syracuse University (Syracuse, NY), and a BS in Cognitive Science from the University of California at San Diego (La Jolla, CA). Previously, Ms Chauvin was with the Department of Defense, Defense Intelligence Agency (DIA), where her last position was Intelligence Officer and Platform Manager in the Directorate of Human Intelligence, Asia Pacific Division. As such, she supported military operations and liaison relationships in Japan, South Korea and Mongolia. During her time with DIA Ms Chauvin deployed to Afghanistan where she conducted intelligence collection operations in Kabul to answer strategic and tactical military intelligence requirements. In recognition of her service, she was awarded both the DIA Civilian Expeditionary Medal and the Department of the Army Commander's Award for Civilian Service.

Eric Chen, Senior Program Assistant
Eric Chen received a B.A. in Biological Basis of Behavior from the University of Pennsylvania, where he also wrote about science and technology for the Daily Pennsylvanian. Before joining BBCSS and COHSI, Eric worked in the financial services industry and owned a bicycle shop in Washington D.C. At the NRC, he provides support to projects involving transportation and human-systems integration. Having a desire to travel to South America, he is currently learning Spanish.

Gary Fischer, Senior Program Assistant
Gary Fischer holds a Bachelor of Laws degree (LLB) from the University of Technology- Sydney and is a former Australian state government lawyer and police sergeant. He served as a transit police and general duties state police first responder and detective for 16 years. Gary was also a lawyer for five years in the state police legal services department and had the opportunity to work on high-profile civil litigation cases occasionally remitted to the High Court of Australia. He advised the state police commissioner and police minister on legal, industrial, policy and operational policing issues with respect to civil litigation against the police force, and provided media advice to the Public Affairs Unit. Gary also advised on legal compliance issues affecting street-level police operations, and advised on proposed legislative amendments affecting the organization.

Renée L. Wilson Gaines, Senior Program Assistant
Renée L. Wilson Gaines is a graduate of Howard University with a B.A. in Criminal Justice/Sociology and is currently working to complete her paralegal certification. Renée joins BBCSS after more than 20 years of law office, non profit, and academia experience. In her short time working at the NRC, she has staffed the Panel to Review O*NET, the Committee on the Role of Human Factors in Home Healthcare, and the Committee on Field Evaluation of Behavioral and Cognitive Sciences-Based Methods and Tools for Intelligence and Counter-Intelligence. She is a die-hard native New Yorker who considers herself an ambassador for the City.

Jatryce Jackson, Senior Program Assistant
Jatryce Jackson is a native Washingtonian. She is a graduate of Cornell University and holds a BA in History and American Studies from Cornell University. Most recently, she obtained a master's certificate in Documentary Filmmaking from George Washington University's School of Media and Public Affairs. Prior to coming to NAS, she taught in the Prince George's County Public Schools system and in a private academy. Jatryce has a passion for social justice and education and would like to utilize her career to effect positive change in our society.

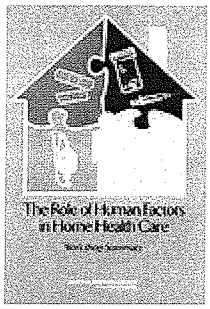
Matthew D. McDonough, M.A., Research Associate
Matthew McDonough is a graduate of The George Washington University with an M.A. in anthropology and a concentration in international development. In five years working at the NRC he has staffed the Board on Life Sciences, the Board on Behavioral, Cognitive, and Sensory Sciences, the Committee on Human-Systems Integration, and the Board on Children, Youth, and Families. In addition to assisting with the work of BBCSS and COHSI, he currently provides support to projects involving national security and disability and rehabilitation research. He has supported such studies as *Guidelines for Human Embryonic Stem Cell Research*, *Human-Systems Integration in the Design Process: A New Look*, *Human Behavior in Military Contexts*, and *Early Childhood Assessment: Why, What, and How*. The Red Sox are the best team ever.

Jeanne Rivard, Ph.D., Senior Program Officer
Jeanne Rivard earned a Ph.D. in Social Work at the University of North Carolina at Chapel Hill where she received a National Research Service Award from NIMH (F31, MH11552) to conduct her dissertation study investigating factors promoting change in interagency collaboration. She also has a M.S.W. degree (University of South Carolina) and a M.S.Ed. (Mount St. Mary's College, Los Angeles, CA). While on the faculty of the Columbia University School of Social Work, her research included a developmental study examining the implementation and intermediate outcomes of a trauma-focused intervention for youth (R21 MH62896) and an evaluation of the implementation and outcomes of an interagency initiative designed to integrate vocational and supportive housing services for homeless persons with mental illness, substance abuse, HIV, and other disabilities. Before coming to DBASSE she worked at the National Association of State Mental Health Program Directors Research Institute where she led initiatives to promote the dissemination of evidence-based practices, was a team leader on the impact component of a cross-site evaluation of a federal child trauma initiative, and coordinated pilot studies to increase the utilization of multi-state administrative datasets to address mental health policy questions. At DBASSE Jeanne will be working with the Committee on the external evaluation of National Institute on Disability and Rehabilitation Research (NIDRR)-funded research and development grants.

4. PUBLICATIONS

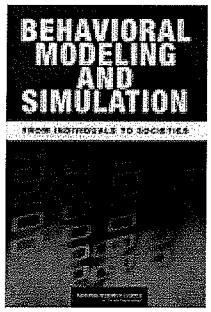
COMMITTEE ON HUMAN-SYSTEMS INTEGRATION
A Celebration of 30 Years of Human-Systems Integration at the NRC (1980-2010)

PUBLICATIONS



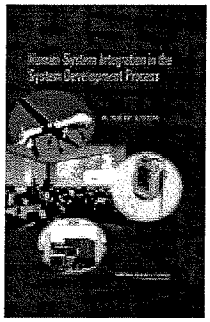
The Role of Human Factors in Home Health Care: Workshop Summary. Washington DC: National Academies Press. (2010)

The rapid growth of home health care has raised many unsolved issues and will have consequences that are far too broad for any one group to analyze in their entirety. Yet a major influence on the safety, quality, and effectiveness of home health care will be the set of issues encompassed by the field of human factors research--the discipline of applying what is known about human capabilities and limitations to the design of products, processes, systems, and work environments. To address these challenges, the National Research Council began a multidisciplinary study to examine a diverse range of behavioral and human factors issues resulting from the increasing migration of medical devices, technologies, and care practices into the home. Its goal is to lay the groundwork for a thorough integration of human factors research with the design and implementation of home health care devices, technologies, and practices. On October 1 and 2, 2009, a group of human factors and other experts met to consider a diverse range of behavioral and human factors issues associated with the increasing migration of medical devices, technologies, and care practices into the home. This book is a summary of that workshop, representing the culmination of the first phase of the study.



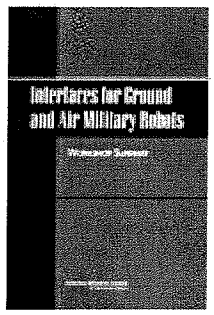
Behavioral Modeling and Simulation: From Individuals to Societies. Washington D.C: National Academies Press. (2008)

Today's military missions have shifted away from fighting nation states using conventional weapons toward combating insurgents and terrorist networks in a battlespace in which the attitudes and behaviors of civilian noncombatants may be the primary effects of military actions. To support these new missions, the military services are increasingly interested in using models of the behavior of humans, as individuals and in groups of various kinds and sizes. Behavioral Modeling and Simulation reviews relevant individual, organizational, and societal (IOS) modeling research programs, evaluates the strengths and weaknesses of the programs and their methodologies, determines which have the greatest potential for military use, and provides guidance for the design of a research program to effectively foster the development of IOS models useful to the military.

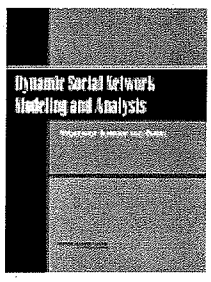


Human-System Integration in the System Development Process: A New Look. Washington D.C: National Academies Press. (2007)

To prevent both the individually annoying and nationally significant consequences, human capabilities and needs must be considered early and throughout system design and development. One challenge for such consideration has been providing the background and data needed for the seamless integration of humans into the design process from various perspectives: human factors engineering, manpower, personnel, training, safety and health, and, in the military, habitability and survivability. This collection of development activities has come to be called human-system integration (HSI). *Human-System Integration in the System Development Process* reviews in detail more than 20 categories of HSI methods to provide invaluable guidance and information for system designers and developers.

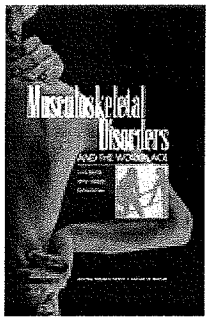


Interfaces for Ground and Air Military Robots: Workshop Summary. Washington, DC: National Academy Press. (2005)



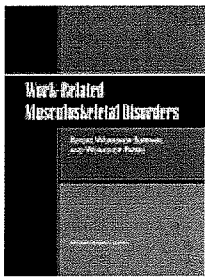
Dynamic Social Network Modeling and Analysis: Workshop Summary and Papers. Washington, DC: National Academy Press. (2003)

In the summer of 2002, the Office of Naval Research asked the Committee on Human Factors to hold a workshop on dynamic social network and analysis. The primary purpose of the workshop was to bring together scientists who represent a diversity of views and approaches to share their insights, commentary, and critiques on the developing body of social network analysis research and application. The secondary purpose was to provide sound models and applications for current problems of national importance, with a particular focus on national security. This workshop is one of several activities undertaken by the National Research Council that bears on the contributions of various scientific disciplines to understanding and defending against terrorism.



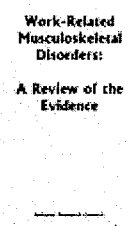
Musculoskeletal Disorders and the Workplace: Low Back and Upper Extremities. Washington, DC: National Academy Press. (2001)

Musculoskeletal Disorders and the Workplace examines the scientific basis for connecting musculoskeletal disorders with the workplace, considering people, job tasks, and work environments. A multidisciplinary panel draws conclusions about the likelihood of causal links and the effectiveness of various intervention strategies. The panel also offers recommendations for what actions can be considered on the basis of current information and for closing information gaps. This book presents the latest information on the prevalence, incidence, and costs of musculoskeletal disorders and identifies factors that influence injury reporting. It reviews the broad scope of evidence: epidemiological studies of physical and psychosocial variables, basic biology, biomechanics, and physical and behavioral responses to stress. Given the magnitude of the problem-approximately 1 million people miss some work each year-and the current trends in workplace practices, this volume will be a must for advocates for workplace health, policy makers, employers, employees, medical professionals, engineers, lawyers, and labor officials.

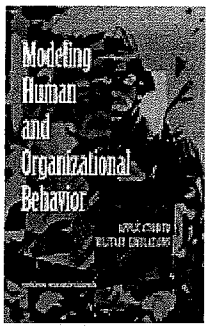


Work-Related Musculoskeletal Disorders: Report, Workshop Summary, and Workshop Papers. Washington, DC: National Academy Press. (1999)

This book presents a preliminary assessment of what is known about the relationship between musculoskeletal disorders and what may cause them. It includes papers and a workshop summary of findings from orthopedic surgery, public health, occupational medicine, epidemiology, risk analysis, ergonomics, and human factors. Topics covered include the biological responses of tissues to stress, the biomechanics of work stressors, the epidemiology of physical work factors, and the contributions of individual, recreational, and social factors to such disorders. The book also considers the relative success of various workplace interventions for prevention and rehabilitation.

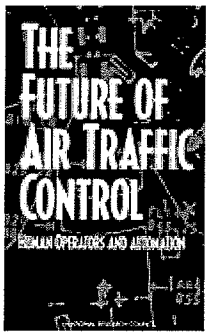


Work-Related Musculoskeletal Disorders: A Review of the Evidence. Washington, DC: National Academy Press. (1998)



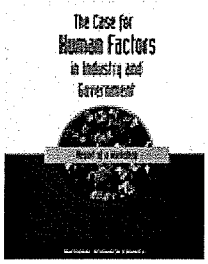
Modeling Human and Organizational Behavior: Application to Military Simulations. Washington, DC: National Academy Press. (1998)

Simulations are widely used in the military for training personnel, analyzing proposed equipment, and rehearsing missions, and these simulations need realistic models of human behavior. This book draws together a wide variety of theoretical and applied research in human behavior modeling that can be considered for use in those simulations. It covers behavior at the individual, unit, and command level. The book provides short-, medium-, and long-term goals for research and development of more realistic models of human behavior.

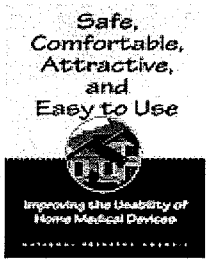


The Future of Air Traffic Control: Human Operators and Automation. Washington, DC: National Academy Press. (1998)

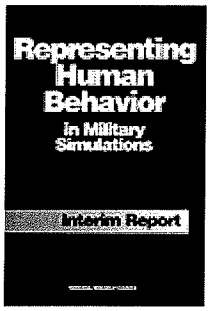
The book explores ways in which technology can build on human strengths and compensate for human vulnerabilities, minimizing both mistrust of automation and complacency about its abilities. The panel presents an overview of emerging technologies and trends toward automation within the national airspace system--in areas such as global positioning and other aspects of surveillance, flight information provided to pilots an controllers, collision avoidance, strategic long-term planning, and systems for training and maintenance. It also examines how to achieve better integration of research and development, including the importance of user involvement in air traffic control. It also discusses how to harmonize the wide range of functions in the national airspace system, with a detailed review of the free flight initiative.



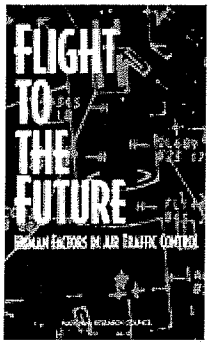
The Case for Human Factors in Industry and Government: Report of a Workshop. Washington, DC: National Academy Press. (1997)



Safe, Comfortable, Attractive, and Easy to Use: Improving the Usability of Home Medical Devices, Report of a Workshop. Washington, DC: National Academy Press. (1996)

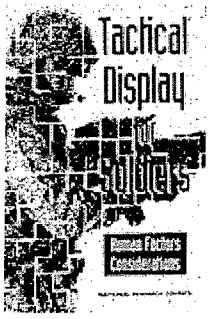


Representing Human Behavior in Military Simulations: Interim Report. Washington, DC: National Academy Press. (1997)



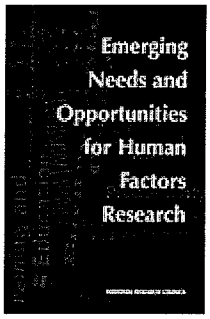
Flight to the Future: Human Factors in Air Traffic Control. Washington, DC: National Academy Press. (1997)

This volume provides a baseline of knowledge about the capabilities and limitations of humans relative to the functions performed in air traffic control. It focuses on balancing safety with the expeditious flow of air traffic, identifying lessons from past air accidents. The book discusses the function of the national airspace system; procedures for hiring, training, and evaluating controllers; factors in controllers' performance; and more.



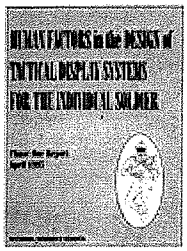
Tactical Display for Soldiers: Human Factors Considerations. Washington, DC: National Academy Press. (1997)

This book examines the human factors issues associated with the development, testing, and implementation of helmet-mounted display technology in the 21st Century Land Warrior System. Because the framework of analysis is soldier performance with the system in the full range of environments and missions, the book discusses both the military context and the characteristics of the infantry soldiers who will use the system. The major issues covered include the positive and negative effects of such a display on the local and global situation awareness of the individual soldier, an analysis of the visual and psychomotor factors associated with each design feature, design considerations for auditory displays, and physical sources of stress and the implications of the display for affecting the soldier's workload. The book proposes an innovative approach to research and testing based on a three-stage strategy that begins in the laboratory, moves to controlled field studies, and culminates in operational testing.



Emerging Needs and Opportunities for Human Factors Research. Washington, DC: National Academy Press. (1995)

This book identifies areas that represent new needs and opportunities for human factors research in the coming decades. It is forward-looking, problem oriented, and selectively focused on national or global problems, including productivity in organizations, education and training, employment and disabilities, health care, and environmental change; technology issues, including communications technology and telenetworking, information access and usability, emerging technologies, automation, and flexible manufacturing, and advanced transportation systems; and human performance, including cognitive performance under stress and aiding intellectual work.



Human Factors in the Design of Tactical Display Systems for the Individual Soldier: Part I. Washington, DC: National Academy Press. (1995)

Organizational Linkages: Understanding the Productivity Paradox. Washington, DC: National Academy Press. (1994)

Workload Transition: Implications for Individual and Team Performance. Washington, DC: National Academy Press. (1993)

Human Factors Specialists' Education and Utilization: Results of a Survey. Washington, DC: National Academy Press. (1992)

Application Principles for Multicolored Displays: A Workshop Report. Washington, DC: National Academy Press. (1990)

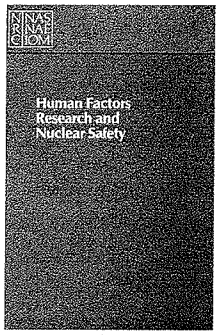
Quantitative Modeling of Human Performance in Complex, Dynamic Systems. Washington, DC: National Academy Press.(1990)

Distributed Decision Making: Report of a Workshop. *Washington, DC: National Academy Press.* (1990)

Decision making in today's organizations is often distributed widely and usually supported by such technologies as satellite communications, electronic messaging, teleconferencing, and shared data bases. Distributed Decision Making outlines the process and problems involved in dispersed decision making, draws on current academic and case history information, and highlights the need for better theories, improved research methods and more interdisciplinary studies on the individual and organizational issues associated with distributed decision making. An appendix provides additional background reading on this socially and economically important problem area.

Human Performance Models for Computer-Aided Engineering. Cambridge, MA: Academic Press. (1989)

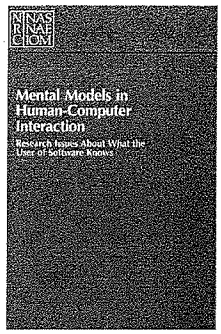
Fundamental Issues in Human-Computer Interaction. Washington, DC: National Academy Press. (1989)



Human Factors Research and Nuclear Safety. Washington, DC: National Academy Press. (1988)

Ergonomic Models of Anthropometry, Human Biomechanics, and Operator-Equipment Interfaces: Proceedings of a Workshop. Washington, DC: National Academy Press. (1988)

Human Factors in Automated and Robotic Space Systems: Proceedings of a Symposium. Washington, DC: National Academy Press. (1987)



Mental Models in Human-Computer Interaction: Research Issues About What the User of Software Knows. Washington, DC: National Academy Press. (1987)

Human Factors Aspects of Simulation. Washington, DC: National Academy Press. (1985)

Methods for Designing Software to Fit Human Needs and Capabilities: Proceedings of the Workshop on Software Human Factors. Washington, DC: National Academy Press. (1985)

Research Needs on the Interaction Between Information Systems and Their Users: Report of a Workshop. Washington, DC: National Academy Press. (1984)

Research Issues in Simulator Sickness: Proceedings of a Workshop. Washington, DC: National Academy Press. (1984)

Research and Modeling of Supervisory Control Behavior: Report of a Workshop. Washington, DC: National Academy Press. (1984)

Research Needs for Human Factors. Washington, DC: National Academy Press. (1983)

Three-Dimensional Displays Perceptual Research and Applications to Military Systems: *Proceedings of a Symposium.* Washington, DC: National Academy Press. (1982)

COMMITTEE ON HUMAN-SYSTEMS INTEGRATION
A Celebration of 30 Years of Human-Systems Integration at the NRC (1980-2010)

COHSI Sponsors

Meetings and activities of the National Research Council's Committee on Human-Systems Integration are sponsored by:

- Agency for Healthcare Research and Quality
- American Psychological Association, Division 21 – Applied, Experimental, and Engineering Psychology
- Federal Aviation Administration
- Human Factors and Ergonomics Society
- National Institute on Disability and Rehabilitation Research
- Office of Naval Research
- US Air Force Research Laboratory
- US Army Research Laboratory

6. ROSTER

Human-Systems Integration at the National Academies
A Celebration of 30 years (1980 – 2010)
Registered Attendees
As of December 2, 2010

Joan Abdallah
AAAS

Terry Allard
Office of Naval Research

Patricia Arellano
Independent

Zunair Ashfaq
University of Pennsylvania School of Medicine

Jennifer Ayers
American Institute for Medical and Biological Engineering

Carryl Baldwin
George Mason University

Lynne Bernstein
National Science Foundation

Meryl Bloomrosen
AMIA

Janet Bochinski
Encore Health Resources

Deborah Boehm-Davis
George Mason University

Vernon Bond
Howard University

Edna Boone
HIMSS

Melissa Brittain
Air Force Culture & Language Center

Kelly Caine
Indiana University

Pascale Carayon
University of Wisconsin-Madison

Andie Cassidy
Naval Sea Systems Command

Don Chaffin
The University of Michigan

Dervon Chang
Basic Commerce and Industries, Inc.

Paul Chatelier
Naval Postgraduate School

Cherie Chauvin
National Research Council

Eric Chen
National Research Council

Susan Chipman
Independent

A. Egon Cholakian
IRDF Project Harvard / Columbia

David Clark
NIH/NIDCR

Joseph Cohn
Office of Naval Research

Shannon Cole
USCG

Daniel Colombo
Basic Commerce and Industries, Inc. (BCI)

Nancy Cooke
Arizona State University

Missy Cummings
Massachusetts Institute of Technology

David Desaulniers
U.S. Nuclear Regulatory Commission

Mayura Deshpande
G&A

David Dinges
University of Pennsylvania School of Medicine

Michael Drillings
MANPrint, US Army

Colin Drury
University at Buffalo: SUNY

Human-Systems Integration at the National Academies
A Celebration of 30 years (1980 – 2010)
Registered Attendees
As of December 2, 2010

Ivy Eastabrooke
Office of Naval Research

Gary Fischer
National Research Council

Pamela Flattau
IDA Science and Technology Policy Institute

Allan Fong
NAVSEA

Michael Goings
Basic Commerce and Industries, Inc

Christian Gonzalez
George Mason University

Philip Grubbs
HIMSS

Jonathan Grudin
Microsoft Research

Ayse Gurses
John Hopkins University

Allyson Hall
BCI

Sheila Harmon Martin
University of the District of Columbia

Douglas Harris
Anacapa Sciences Inc

Robert Hauser
National Research Council

Kerm Henriksen
Agency for Healthcare Research & Quality

Bradford Hesse
National Cancer Institute, NIH

Daniel Ilgen
Michigan State University

Andrew Imada
International Ergonomics Association

Jatryce Jackson
National Research Council

Christie Jones
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Mary Kaiser
NASA Ames Research Center

Bill Kaliardos
FAA Systems Engineering Integration, AIP-IB

David Kamien
Mind-Alliance Systems

Waldemar Karwowski
University of Central Florida

Heather Kelly
American Psychological Association

Jonathan King
National Institute on Aging / NIH

Thubi Kolobe
University of Oklahoma Heath Sciences Center

Steven Kozlowski
Michigan State University

Robert Krikorian
State Dept/Bureau of Intelligence and Research

Barbara Krimgold
Center for Advancing Health

Gerald P. Krueger
Krueger Ergonomics Consultants

Alexander Landsburg
CSC Advanced Marine Center

Lucian Leape
Harvard School of Public Health

Richard Lempert
Human Factors DHS S&T

Human-Systems Integration at the National Academies
A Celebration of 30 years (1980 – 2010)
Registered Attendees
As of December 2, 2010

Gavin Lew
User Centric, Inc.

Vicki Lewis
Virginia Tech University

John Lockett
US Army Research Laboratory

Janae Lockett-Reynolds
DHS

William Marras
The Ohio State University

Anne Mavor

Robert McCreight
The George Washington University

Matt McDonough
National Research Council

James McGee
National Research Center

Susan Meadows
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Nancy Merritt
National Institute of Justice

Thomas Moore
DARPA

Wendy Nelson
National Cancer Institute

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Raymond Nickerson
Tufts University

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Bonnie Novak
BMT Designers & Planners

Cynthia Null
NASA

Kelly O'Brien
NAVSEA 05H

Mary Ellen O'Connell
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Jennifer O'Connor
Department of Homeland Security

Raja Parasuraman
George Mason University

Mary Parker
IPHT, INC

Richard Pew
BBN Technologies

Stephen Popkin
US DOT Volpe Center

Stephanie Pratt
George Mason University

Bruce Preiss
Wright-Patterson Air Force Base

Matt Quinn
AHRQ

Deborah Randall
Law Office of Deborah Randall

Sharla Rausch
Department of Homeland Security

Proctor Reid
National Academy of Engineering

David Rempel
University of California, Berkeley

Leslie Richards
University of the District of Columbia

Frank Ritter
Pennsylvania State University

Jeanne Rivard
National Research Council

Matthew Rizzo
University of Iowa

Human-Systems Integration at the National Academies
A Celebration of 30 years (1980 – 2010)
Registered Attendees
As of December 2, 2010

William Rouse
Georgia Institute of Technology

Philip Rubin
Haskins Laboratories

Mark Rutherford
US Coast Guard

Dylan Schmorrow
Office of the Secretary of Defense

Robert Schumacher
User Centric, Inc.

Marc Sebrechts
The Catholic University of America

Thomas Sheridan
Massachusetts Institute of Technology

Abha Shrestha
AHRQ

Paula Skedsvold
FABBS

Philip Smith
The Ohio State University

Douglas Sprunger
National Research Council

Eric Stohr
BCI (NSWCDD)

Lynn Strother
Human Factors and Ergonomics Society

Kristen Talcott
Virginia Tech

John Tangney
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Scott Tousley
DHS/DNDO

Susan Van Hemel

Joyce Vantassel-Baska
College of William and Mary

Maria Angelica Velazquez
Pennsylvania State University

Barbara Wanchisen
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Eric Warner
Russell Sage Foundation

Wanda Ward
National Science Foundation

Toby Warden
National Research Council

Joel Warm
Air Force Research Laboratory

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University of Massachusetts, Lowell

Howard Weiss
Purdue University

Brooke Whiting
NEA

Joe Wholey
University of Southern California

Renée L. Wilson Gaines
National Research Council

Barbara Woolford
NASA

Bernadette Wright
The Lewin Group

Laurence Young
MIT

Troy Zarcone
National Institute on Alcohol Abuse and Alcoholism, NIH

Teresa Zayas Caban
Agency for Healthcare Research and Quality