

JOHN EDWARD ANDERSON

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Curriculum Vitae

- Birth** May 15, 1927 - Chicago, Illinois
- Youth** Lived in China, 1928-36, as son of evangelical missionaries; St. Paul to 1938; Chicago 1938-47. Attended Von Steuben High School in Chicago; U. S. Navy 1945-46, Carpenter's Mate 3rd Class; North Park College, Chicago, 1946-47.
- Family** Married, three grown children.
- Degrees** Bachelor of Science in Mechanical Engineering Iowa State University, 1949
Master of Science in Mechanical Engineering University of Minnesota, 1955
Ph.D., Aeronautics and Astronautics Massachusetts Institute of Technology, 1962

Professional experience

1949-1951 Aeronautical Research Scientist, NACA, Langley Field, Va. Developed methods of analysis of stresses and deflections in delta wings; applied to F-103 variable-sweep wing. Experience with high-speed electronic computation. Co-author of NACA Report 1131, 1953.

1951-1963 Honeywell, Inc., Aeronautical Division

1951-1954 Design and Development Engineer, Work Director. Developed, designed, and released to production components of aircraft fuel measurement systems. U. S. Patents 2,824,270; 2,916,679. Reduced fuel-gage sensor from 92 to 19 parts from concept to release-to-production in nine months, yet met more difficult MILSPEC. Gage retrofitted into 720 B-47 aircraft, gave Honeywell dominant position in market. Introduced first use of plastic parts, adhesives, nylon gearing, and printed circuits in Aero Division products. Led mechanical design of combined transistor-amplifier and indicator for the B-58 aircraft that received the *Aviation Age* Product-of-the-Month Award, May 1953. Studied for MS degree at University of Minnesota and took three-quarter course in analytical dynamics, key foundation for future work.

1954-1955 Senior Research Engineer, Aircraft Dynamics. Analysis and synthesis of military aircraft autopilot systems via analytical techniques and analog computer. Analysis of yaw-pitch coupling modes in MX-2144 drone.

1955-1956 Research Project Engineer. Directed analytical work on F-100 and F-107 autopilot systems. Directed work of 15 engineers with work of four other companies plus mathematical development of control systems. U.S. Patents 2,944,203, Autopilot Servo; 3,011,350, Control Apparatus.

1956-1957 Research Project Engineer in Inertial Guidance. Invented and led development of gimballess inertial navigation system that was widely adopted a decade later, error-vector ICBM and IRBM guidance system, and high-latitude azimuthal guidance system. U.S. Patent 3,111,850, Acceleration Sensing Means.

1957-1958 Principal Research Engineer, one of 12 of 1500 engineers in Honeywell. Consultant in inertial navigation, dynamics and vibration engineering. Led proposal efforts and taught courses in inertial navigation. Directed project to develop master reference system for Polaris submarine using electrostatic gyros, which led to a large Navy contract. Took three-quarter course on statistics and probability at the University of Minnesota.

1958-1959 Research Staff Engineer. Proposal work. Led department-wide program of 25 research and development engineers on development of gimballess inertial navigator involving operational digital computers. Invented novel means of compensating for errors that led to Air Force contract. U. S. Patents 3,162,052, Pendulous Gyro-

scopic Accelerometers; and 3,269,179, Navigation Instruments. Took three-quarter course in Mathematical Physics at the University of Minnesota.

1959-1962 Worked on Ph.D. in Aeronautics and Astronautics at M. I. T. under Convair Fellowship. Studied special and general relativity theory and solved problem of clock paradox in general relativity. Studied quantum physics, electromagnetic theory, and high temperature gas dynamics. Wrote Ph.D. thesis, Magnetohydrodynamic Shock Waves, only Ph.D. thesis of 200 that year published by M. I. T. Press, 1963; International Ed. published by University of Tokyo Press; translated into Russian and published by Atomizdat, Moscow, 1968.

1962 Research Staff Engineer, Research Department, Military Products Group. Coordinated work with various Honeywell Divisions. Performed studies on laser effects, high-power lasers, laser gyro, magnetohydrodynamic systems.

1963 Manager of Space Systems. Directed 24 engineers in preliminary design of Solar Probe Spacecraft that in five months led to first corporate space-systems contract. Lecturer on Magnetohydrodynamics, University of Minnesota.

1963-1986 Department of Mechanical Engineering, University of Minnesota

1963-1967 Associate Professor. Taught magnetohydrodynamics, thermodynamics, heat transfer, design. Research in magnetogasdynamics of electric arcs involving numerical solution of partial differential equations on CDC 1604, 6600. Consultant to Honeywell on spacecraft systems, explosion dynamics, inertial systems; to 3M on magneto- and electro hydrodynamics.

1967-1968 National Academy of Sciences Exchange Professor in the Soviet Union, Institute of Heat and Mass Transfer, Minsk. Visited 13 cities, many laboratories and factories. See "The Russia I Found," *Aeronautics and Astronautics*, Nov. 1969.

1968-1971 Teaching and research in New Concepts in Urban Transportation and a wide range of environmental issues. Led Honors Seminar "Technology, Man and the Future" fall 1969; organized, moderated and lectured in interdisciplinary course "Ecology, Technology and Society" involving 30 faculty members and industry representatives, taken by over 3500 students in 15 years. Supervised student design projects on planning problems related to personal rapid transit. Chairman, Committee on Lower Division Engineering Programs.

1971- Professor of Mechanical Engineering

1971-1974 Chairman, Interdisciplinary Task Force on New Concepts in Urban Transportation under \$50,000 grant from Minnesota State Legislature. Chairman, Lower Division Committee. Teaching and research in urban transportation systems. General Chairman of 1971, 1973, 1975 International Conferences on Personal Rapid Transit. Managing Editor, *New Concepts in Urban Transportation*; Editor, *Personal Rapid Transit*, *Personal Rapid Transit II*.

1974-1975 On leave of absence as Technical Advisor to the Colorado Regional Transportation District during a large-scale analysis of transit alternatives for the Denver Metropolitan Area. Assisted in supervision of Systems Management Contractor (TRW) team of 120 professional planners and engineers in area of ridership analysis and contributed to the simplification of transit modeling techniques.

1975-1976 On leave of absence as consultant to Raytheon Company Transportation Systems Group who were preparing through technical and marketing work to enter the field of manufacture of personal rapid transit systems. Developed a mathematical model for allocation of the reliabilities of components and subsystems of a system in such a way that a service-dependability constraint is met at minimum life-cycle cost. Contributed to the development of marketing information and theory of cost-effectiveness of automated transit systems.

1976-1978 Teaching and research in transit systems analysis and design, novel windmill designs and technology-society issues. Consultant in transit planning and design and in transportation energy-policy issues to Minnesota DOT. Wrote textbook *Transit Systems Theory*.

1978-1982 Director of Industrial Engineering. Teaching in transit systems analysis and design, technology-society issues, engineering economics, and engineering design. U. S. DOT sponsored research in reliability allocation theory of transit systems. Research in optimization of transit systems. Consultant to the German Joint Venture DEMAG+MBB on marketing, planning and theory of automated transit systems, to the Indianapolis Department of Metropolitan Development, and to Arthur D. Little, Inc. Formed Anderson MacDonald, Inc., Transportation consultants. Initiated development of new personal rapid transit system in Fall 1981 and started applying for patents in Winter 1982.

1982-1983 Under \$100,000 University of Minnesota Patent Development Grant, developed new personal rapid transit system and, with assistance of University officials, founded Automated Transportation Systems, Inc. to develop the system. Awarded U. S. Patent Nos. 4,522,128 and 4,665,830 "Switch Mechanism," Nos. 4,665,829 and 4,665,830 "Guideway Construction and Method of Installation," and No. 4,726,299 "Method and Apparatus for Controlling a Vehicle."

1983-1985 On leave of absence to work on technology and business development of new PRT system through ATS, Inc. Effort joined in April 1984 by the Davy McKee Corporation, whereupon worked for 14 months in their Chicago Technical Center. Developed detailed system specifications; computer programs on control, operations, guideway design and vehicle dynamics; extensive analytical work which resulted in improved designs.

1985-1986 Returned to teaching. Continued business and technical development of new PRT system. On leave Spring Quarter to work on new PRT system under new name, *Taxi 2000*. Responsible for technical development program. In June 1986 Elected President, Chairman and Chief Executive Officer of Taxi 2000 Corporation. Moved to Boston to enhance prospects for Taxi 2000.

1986-1992 Professor of Aerospace and Mechanical Engineering, Boston University.

Taught mechanical engineering design, engineering mechanics and transit systems analysis and design. Continued Taxi 2000 business and technical development. Developed software for simulating PRT systems in networks, vehicle dynamics and control, economic performance, and ridership. Worked with Raytheon engineers to develop hardware implementation of Taxi-2000 control system, with ADL engineers and United Engineers & Constructors on planning and cost analysis, and with Raytheon executives to raise funds to build a demonstration and to develop the business. Supervised activities of Taxi 2000 representatives in over a dozen cities. Led writing of proposal that won a \$1,500,000 Phase I contract from the Northeastern Illinois Regional Transportation Authority (RTA) for initial development of PRT, with Stone & Webster Engineering Corporation as prime contractor. Helped form an industrial team to design and perform a Taxi 2000 test program. Developed Maglev Performance Simulator for National Maglev Initiative Office, U. S. DOT, which was licensed to Hughes and Grumman.

1986-2004 President and Chief Executive Officer, Taxi 2000 Corporation. Returned to Minnesota in late 1994. Led effort that resulted in a \$40,000,000 Phase II design and test program of Personal Rapid Transit co-sponsored by the RTA and Raytheon Company. Technical consultant to Raytheon on the program. Developed analyses on vehicle dynamics, guideway structural dynamics, failure modes and effects analysis, network operations. Improving computerized planning tools for planning of PRT systems. Lectured on PRT in the Netherlands, Sweden, South Africa, and Korea. Further developed the PRT network simulation tool by applying it to the Seoul National University, several airport baggage-handling applications, University of Minnesota, Cincinnati, Rochester, and Minneapolis. In 1998 Raytheon abandoned the PRT field because their engineers allowed their PRT system to grow too large and too expensive. In January 2000 we signed an agreement with Raytheon that freed us entirely of legal entanglements with them.

2000-2004 Formed an industry team with eight Minnesota companies to commercialize Taxi 2000 PRT system. Led effort that raised \$800,000 from private sources. With these funds in hand, designed and supervised construction and operation of an automatically controlled, LIM-propelled vehicle and the 60-ft guideway on which it ran flawlessly for thousands of rides, mostly at the 2003 Minnesota State Fair, where the system was the central exhibit sponsored by the Minnesota High Tech Association.

2005- Due to bizarre circumstances resigned from Taxi 2000 in January 2005 and formed PRT International, LCC with former Taxi 2000 directors Wendell Maddox, ION Corporation, and Charles Michael, Short Elliott Hendrick-

son, Inc. New Taxi 2000 management sued over intellectual-property issues. As a result Maddox and Michael withdrew from PRT International. Settlement with Taxi 2000 signed in December 2005 stating that there is no non-compete agreement. The law states that one cannot be denied the use of what is in one's mind or the right to earn a living in the best way one can. As a result, during 2005-6 developed a complete set of specifications for a new and improved PRT system and the software control system needed to operate it with no reference to any Taxi 2000 IP and in sufficient detail to direct a new team. Have been joined by seven experienced engineers who are learning the details of PRT under NDAs and who are assisting in developing a comprehensive business plan.

Activities

Past Club President, Toastmasters International
Board Chairman, Unitarian-Universalist Church of Minnetonka, 1966-67
Chairman, Symposium on the Role of Science and Technology in Society,
University of Minnesota, April 7-8, 1969
AIAA Distinguished Lecturer, 1970-71
Overseas Speakers Bureau, U. S. Information Agency
Lecturer, Scientists Institute for Public Information
Chairman, Task Force on New Concepts in Urban Transportation, 1970-4
Chairman, Committee on Lower-Division Programs, 1971-2.
Organizer and Chairman, National Conference on Personal Rapid Transit, November 1971
General Chairman, 1973 and 1975 International Conferences on Personal Rapid Transit
Managing Editor of newsletter, New Concepts in Urban Transportation, 1971-1973
Member, Committee on New Transportation Systems and Technology, Transportation Research Board, National
Research Council, 1972-79
Member, SAE Transportation Systems Activity, 1972-78
Member, Panel on Automated Guideway Transit, Office of Technology Assessment, 1975
Founder and first president, Advanced Transit Association (ATRA), 1976-79
Member, Academic Council, University of Mid America, 1976-78
Member, Commission on Socio-Technical Systems, Transportation Research Board,
National Research Council, 1978
Member, New Programs Committee, University College, 1977-81
Member, Panel on Advanced Group Rapid Transit, Office of Technology Assessment, 1978-79
Member, University of Minnesota Senate, 1979-82
Advisor to student chapter of Tau Beta Pi, 1977-83
Chairman, Adult Forum, First Unitarian Society, 1979-82
Chairman, New Programs Committee, University College, 1980-81
Chairman, Review Committee on Electrical Engineering Department, 1980-81
Invited lecturer on national security and technology-society issues, about 60 lectures per year, 1978-82
Chairman, Curriculum Committee, Aero/Mech Dept, Boston University
Member, Academic Policy Committee, College of Engineering, Boston University
Member, University-wide Task Force on Distribution Requirements, 1989-90
Member, National Advisory Committee, Innovative City Project since 1987
Chairman, International Conference on PRT and Other Emerging Transportation Systems, Nov. 1996

Honors

Minnesota Public Interest Research Group Public Citizen Award, 1982
George Williams Fellowship Award, University YMCA, 1982
Outstanding American Inventor of 1989, Intellectual Property Owners Foundation.
Fellow, American Association for the Advancement of Science.
Honorary Lifetime Member, Advanced Transit Association

Honorary Societies

Tau Beta Pi, Phi Kappa Phi, Pi Tau Sigma, Sigma Xi, Eta Kappa Nu

Honorary Listings

American Men and Women in Science
Biography International
Biographical Roll of Honor
Biography of the Year
Community Leaders and Noteworthy Americans
Dictionary of International Biography
Directory of Distinguished Americans
International Book of Honor
International Directory of Distinguished Leadership
International Leaders in Achievement
International Who's Who in Community Service
International Who's Who in Education
International Who's Who in Engineering
International Who's Who of Intellectuals
Men and Women of Achievement
National Register of Prominent Americans and International Notables
National Social Directory
Notable Americans
Personalities of America
Personalities of the Americas
Personalities of the West and Midwest
The International Directory of Distinguished Leadership
Two Thousand Men of Achievement
Who's Who in America
Who's Who in Aviation
Who's Who in Aviation and Aerospace: U.S. Edition
Who's Who in Engineering
Who's Who in Finance and Business
Who's Who in Technology Today
Who's Who in the Midwest
Who's Who in the East
Who's Who in Society
Who's Who in the United States
Who's Who in the World
Who's Who of Information Technology
5000 Personalities of the World
2000 Outstanding Intellectuals of the 20th Century
2000 Outstanding Scientists of the 20th Century

Registration

Registered Professional Engineer in Minnesota and Illinois, registration has expired

Memberships and Past Memberships

Advanced Transit Association, founder and first president, member of executive committee
American Institute of Aeronautics and Astronautics,
Associate Fellow, Past Chairman of the Twin Cities Section,
Past Director of Region V and member of the National Board
American Association for the Advancement of Science, Fellow
American Institute of Industrial Engineers, past member Twin Cities Board of Directors
American Mensa Association
American Society of Planning Officials

American Society of Mechanical Engineers
Citizens League of the Twin Cities
Federation of American Scientists
Friends of the Earth
International Association for Impact Assessment
National Society of Professional Engineers
Science, Technology and Society Association, United Kingdom
Scientists Institute for Public Information, Fellow
Society of Automotive Engineers
Union of Concerned Scientists
World Federalists Association
World Future Society

Sponsored Overseas Travel

- 1964 Lecture on Transportation-Cooled Arcs, Brussels. Sponsor: U. S. Air Force.
- 1967-68 Exchange visit to the Soviet Union (Nov 67-Sept 68). Lectures in London, Stuttgart, Munich, Stockholm, USSR. Sponsored jointly by National Academy of Sciences and Soviet Academy of Science.
- 1973 Lectures on New Concepts in Urban Transportation in Singapore, Zurich, Coventry, Gothenburg, Stockholm, Paris and Hagen.
Sponsor: United States Information Agency
- 1974 Lectures and inspection tour of transit developments in the Federal Republic of Germany.
Sponsor: National Science Foundation
- 1975 Site visits to new transit system development programs in Tokyo, Paris, and Hagen, FRG.
Sponsor: The Raytheon Company
- 1977 Lectures on transit systems theory in Bucharest, Hamburg, Düsseldorf, Bonn and Hagen.
Sponsors: U. S. Information Agency and U. S. State Department American Specialists Program
- 1979 Speaker and Session Chairman, International Symposium on Traffic and Transportation Technologies, Hamburg
Sponsor: German Ministry for Research and Technology
- 1981 Speaker, Conference on New Energy Conservation Technologies, Berlin
Sponsor: International Energy Agency
- 1993 Lectures in Amsterdam and South Africa
Sponsor: Raytheon Company
- 1994 Lecture at Transportation Conference, Linköping
Sponsor: Swedish Transportation and Communications Research Board
- 1995 Two-week course on Personal Rapid Transit, Chalmers University, Gothenburg
Sponsor: Swedish Transportation and Communications Research Board
- 1997 Two-week course on Personal Rapid Transit, Seoul and Postech University, Korea
Sponsor: Woobo Enterprise, Ltd. Seoul, Korea.
- 2005 Keynote lecturer, European Conference on Advanced Automated Transit Systems, Bologna, Italy, 7-8 Nov.
Sponsor: University of Bologna.

Books Authored or Edited

Magnetohydrodynamic Shock Waves, Cambridge: M. I. T. Press, 1963.
Magnetogasdynamics of Thermal Plasma, Moscow: Energia, 1970.
Personal Rapid Transit, Co-Ed., Audio Visual Library Services, University of Minnesota, 1972.
Personal Rapid Transit II, Editor, AVLS, University of Minnesota, 1974.
Transit Systems Theory, Lexington, Mass.: D. C. Heath and Company, 1978.

Statements Before Congressional Committees

On reconversion from military to non-military production. Before the Subcommittee on Science, Research and Development of the Committee on Science and Astronautics, U. S. House of Representatives, June 1971, related to the Conversion Research and Education Act of 1971, H. R. 34, pp. 694-696.

On National Transportation Policy. Before the Senate Commerce Committee related to the National Transportation Act of 1971, S. 295, S. 134, S. 2279, March 16, 1972, pp 140-143, 148-150.

On a National Commitment to develop new forms of transit. Before the House Subcommittee on Transportation Appropriations, April 24, 1972, pp. 1409-1425.

On National Transportation Policy. Before the House Subcommittee on Transportation Appropriations, March 6, 1974, pp. 267-292.

On Development of Cost-effective Automated Transit. Before the Senate Subcommittee on Transportation Appropriations, May 1977, pp. 1480-1497.

External Unclassified Publications

"Deflections and Stresses in Solid-Plate Delta Wings," (with Hedgepeth and Stein), NACA Report No. 1131, 1953.

"An Analysis of Errors in Inertial Navigation Systems," Proc. Third National Conference on Military Electronics, Washington, D. C., June 1959.

"Effects of the Special Theory of Relativity on Unidirectional Motion under Constant Proper Acceleration," University of Minnesota, 1959.

"General Relativity and Time Dilation," Massachusetts Institute of Technology, 1959.

"The Influence of Charge Separation and Current Inertia on Magnetohydrodynamic Shock Structure," American Rocket Society Annual Meeting, November 1962.

"Efficient Design of Magnetohydrodynamic Pumps," American Society of Mechanical Engineers Paper No. 67-WA/ENER-4, 1967.

"Transpiration Cooling of a Constricted Electric-Arc Heater," (with E. R. G. Eckert), *AIAA Journal*, 5:4(1967):699-706.

"The Inverse Problem in Arc Physics," *Physics of Fluids*, 10:4(1967):894-896.

"Local Temperature Variations of a Transpiration-Cooled Wall Due to Radiant Heating," *Journal of Heat Transfer*, 90(1968):1146-1150.

"The Curvature and Stability of an Electric Arc in Crossflow,"

Progress in Heat and Mass Transfer, 2(1969):419-425.

"Stability of an Arc Column in Crossflow," ASME Paper No. 69-WA/HT-60, 1969.

"The Russia I Found," *Astronautics and Aeronautics*, Nov. 1969.

"Capacity of Small-Car Transit Systems," *AIAA Journal*, 7:9(1969):1821.

"Comparisons Between Fixed-Guideway Transit Concepts for Medium-Density Metropolitan Areas," (with J. A. Kieffer), Urban Technology Conference, New York City, May 24-26, 1971, AIAA Paper No. 711-518.

"Implementing Changes in Engineering Education," *Chemical Engineering Education*, 6:2(1972):92.

"Morphology in Urban Transportation," *Personal Rapid Transit*, Audio Visual Library Services, University of Minnesota, 1972.

"The Service Potential of Personal Rapid Transit," Conference of the Western Section of the Institute of Traffic Engineers, Portland, Oregon, July 11, 1972.

"Implementation of Personal Rapid Transit," ASCE National Transportation Engineering Meeting, Milwaukee, July 17-21, 1972, Preprint No. 1755.

Planning for Personal Rapid Transit, (contributor and editor), Center for Urban and Regional Affairs, University of Minnesota, December 1972.

"PRT: Urban Transportation of the Future?," *The Futurist*, 7:1:(1973):16-20.

"Some Fundamentals in the Design of Automated Network Transport Systems," Institute of Traffic Engineers, 43rd Annual Meeting Technical Papers, August 1973.

"Humanizing Urban Transportation Technology: The Personal Rapid Transit Concept," *Professional Engineer*, November 1973.

"A New Era in Urban Transportation," a sound color film strip, Audio Visual Library Services, University of Minnesota, 1973.

"Theory of Design of PRT Systems for Safe Operation," 1973 International Conference on Personal Rapid Transit, May 1973, *Personal Rapid Transit II*, Audio Visual Library Services, University of Minnesota, January 1974.

"PRT", *Environment*, 16:3(1974):6-11.

"Dual-Mode, Captive-Vehicle PRT and Pallet Systems," First International Conference on Dual-Mode Transportation, Transportation Research Board, May 29-31, 1974.

"The 1975 International Conference on Personal Rapid Transit," Society of Automotive Engineers, February 1976.

"The Development of a Model for Analysis of the Cost Effectiveness of Alternative Transit Systems," *Personal Rapid Transit III*, Audio Visual Library Services, University of Minnesota, July 1976.

"Introduction: A Derivation of the PRT Concept," *PRT III*, AVLS, U of MN, 1976.

"The Selling of Rail Rapid Transit," a book review, *Planning*, September 1976.

"Cabintaxi: Urban Transport of the Future," *Elevator World*, 25:4(1977):16-25.

"Vehicle Fleet Costs," *Advanced Transit News*, 1:4(1977).

"Life-Cycle Costs and Reliability Allocation in Automated Transit,"
High Speed Ground Transportation, 11:1(1977):1-18.

"Research and Development Needs in Ground Transportation," *Advanced Transit News*, 1:5(1977).

"The University of Minnesota in 500 Years," lead article in *Update*, Office of University Relations, University of Minnesota, September 1977.

"Automated Guideway Transit and the Revitalization of the Central Business District," *Advanced Transit News*, 1:7(1977).

"Can Cities be Restructured for Transit," a book review, *Planning*, March 1978.

"Optimization of Transit Guideway Structures," International Conference of the Advanced Transit Association, Indianapolis, April 1978.

"Theory of Reliability Requirements," Int. Conf. of ATRA, 1978.

"A Comparison of Alternative Loop Automated Transit Systems," Int. Conf. of ATRA, 1978.

"Get Out on the Guideway and Walk," *Advanced Transit News*, 2:5(1978).

"Automated Guideway Transit in the Central City,"
Journal of Advanced Transportation (JAT), 13:3(1979):25-40.

"Technology, Society and the Future," *Futurics*, 3:3(1979)259-275.

"Breaking the Transit Dilemma through Innovation," a sound color slide presentation, AVLS, University of Minnesota, 1979.

"ATRA Presidential Welcoming Address," Proceedings of the International Symposium on Traffic and Transportation Technologies, Hamburg, June 18-20, 1979.

"A Note on Comparisons of Cost Effectiveness in Automated Guideway Transit Systems," *JAT*, 13:1(1979):81-86.

"The Probability of Destruction of a Missile Silo," Fall 1979.

"The Properties of Intercontinental Ballistic-Missile Trajectories With a View to Determination of Errors," Fall 1979.

"Are We Vulnerable to a First Strike," Winter 1980. (These three papers are unpublished, but are included because of many requests for them. They have been circulated widely to many groups including the Gen. Brent Scowcroft Presidential Commission on Deployment of the MX Missile System.)

"Institutional Problems in the Development of Transit Innovations," *Elevator World*, 28:3(1980):40-50.

"Roots of the Dilemmas," 1980 Frontiers in Education Conference, ASEE/IEEE, Houston, October 1980.

"Personal Rapid Transit," with R. A. MacDonald and R. D. Doyle, *Environment*, 22:8(1980):25-37.

"Designing Transit to Minimize Urban Costs and Energy Use," *Current Issues*, January 1981.

"A Position Paper on the MX Missile System," International Peace Issues Forum, United Ministries in Higher Education, February 1981.

- "Fundamentals of Personal Rapid Transit," a book review, *Transportation Research*, 15A(1981):265-267.
- "An Energy Saving Transit Concept for New Towns," Proceedings of the Conference on New Energy Conservation Technologies, International Energy Agency, Berlin, April 6-10, 1981, pp 2962-2968.
- "An Energy Saving Transit Concept," *JAT*, 15:3(1981):127-141.
- "First Strike: Myth or Reality," *The Bulletin of the Atomic Scientists*, 37:9(1981):6-11.
- "Missile Vulnerability--What You Can't Know," *Strategic Review*, 10:2(1982).
- "Calculation of Performance and Fleet Size in Transit Systems," *JAT*, 16:3(1982)231-252.
- "Nuclear War Fighting Means First Strike," ASEE Annual Conference Proceedings, 1983.
- "Optimization of Transit-System Characteristics," *JAT*, 18:1(1984):77-111.
- "A New System for Downtown Distribution," Metropolitan Conference on Public Transportation Research, University of Chicago, June 19, 1986.
- "Automated Transit Vehicle Size Considerations," *JAT*, 20:2(1986):97-105.
- "A Note on Fare Policy in Personal Rapid Transit," *JAT*, 21:1(1987):81-84.
- "The TAXI 2000 Personal Rapid Transit System," *JAT*, 22:1(1988):1-15.
- "What Determines Transit Energy Use," *JAT*, 22:2(1988):108-132.
- "Technology Advances and Their Impacts on the Community," Wisconsin Community Development Society keynote speech, Madison, Wisconsin, October 8, 1990.
- "The Taxi 2000 Personal Rapid Transit System," Transportation 2000 Conference, Aspen, Colorado, October 6-8, 1991.
- "Dependability as a Measure of On-Time Performance of Personal Rapid Transit Systems," *JAT*, 26:3(1992):101-212.
- "Transportation Careers Move into the Future," *Engineering Horizons*, Fall 1992 Edition, p. 31.
- "Safe Design of Personal Rapid Transit Systems," *JAT*, 28:1(1988):1-15.
- "Fundamentals of Personal Rapid Transit." Conference on Automated People Movers, Las Colinas, Texas, March 18-21, 1993.
- "Maglev Performance Simulation." With George Anagnostopoulos and Frank L. Raposa, 12th International Conference on Magnetically Levitated Systems and Linear Drives, Argonne National Laboratory, Argonne, Illinois, May 19-21, 1993.
- "Maglev Performance Simulator," Report of Contract No. DTRS-57-94-C-00004, U. S. Dept. of Transportation, February 19, 1994
- "Synchronous or Clear-Path Control in Personal Rapid Transit," *JAT*, 30:3(1996):1-3.
- "The Historic Emergence and State of the Art of PRT Systems," *Infrastructure*, 2:1(1996):21-27.
- "Essentials of Personal Rapid Transit," *Infrastructure*, 2:3(1997):8-17.

"Some Lessons from the History of PRT," Conference on PRT and Other Emerging Transportation Systems, Minneapolis, November 1996.

"The Design of Guideways for PRT Systems," 1997.

"Longitudinal Control of a Vehicle," *JAT*, 31:3(1997):237-247.

"Control of Personal Rapid Transit Systems," *JAT*, 32:1(1998).

"Personal Rapid Transit: Matching Capacity to Demand," an Advanced Transit Association paper, February 1998.

"Effect of Redundancy on Failure Frequency in PRT Systems," *Transit Systems Theory*, 1998.

"Simulation of the Operation of Personal Rapid Transit Systems." *Computers in Railways VI*, WIT Press, Boston, Southampton, 1998, 523-532.

"A Review of the State of the Art of Personal Rapid Transit." *JAT*, 34:1(2000).

"An Optimized Personal Rapid Transit System." APM Proceedings, July 2001.

"Deflection and Twist of a Curved Beam under Uniform Load." November 2001

"The SkyWeb Express Personal Rapid Transit System," *Urban Transit XI*, WIT Press, Southampton, Boston, 2005, 113-121.

"The Design, Operation, and Benefits of an Optimized PRT System," Automated People Mover Conference, Orlando, 2005.

"The Future of High-Capacity Personal Rapid Transit," European Conference, AATS 2005.

"How Innovation can make Transit Self-Supporting," The Conference of Geogist Organizations, July 19-23, 2006, O'Hare Radisson Hotel, Chicago.

"High-Capacity Personal Rapid Transit," www.advancedtransit.org, 2007