

PROFESSIONAL RESUME  
Summer 2003

MICKEY RANDALL WILHELM

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PERSONAL

DATE OF BIRTH:	July 9, 1948	AGE:	55
MARITAL STATUS:	Married (two adult children)		

EDUCATION

Ph.D., with specialization in operations research, November 1975, The University of Alabama in Huntsville, Huntsville, Alabama.

M.S.E., with specialization in industrial and systems engineering, The University of Alabama in Huntsville, Huntsville, Alabama, 1971.

B.S.E., with specialization in electrical engineering, The University of Alabama in Huntsville, Huntsville, Alabama, 1970.

Graduate, New Hope High School, New Hope, Alabama, Salutatorian, College Preparatory Diploma, 1966.

LICENSURE

Licensed professional engineer in the Commonwealth of Kentucky, license number 13,250.

EXPERIENCE

August 1995 - Present: Additional administrative appointment as Associate Dean of Engineering, J. B. Speed Scientific School (The School of Engineering and Applied Science), University of Louisville, Louisville, Kentucky.

January 2002–Present: Additional administrative appointment as Director of Programs, The Logistics and Distribution Institute, University of Louisville, Louisville, Kentucky.

January 15–June 15, 2001–Visiting Faculty Member in the Center for Economic Research (CentER) at Tilburg University, Tilburg, The Netherlands (while on sabbatical leave of absence from the University of Louisville).

October 1994 - August 1995: Additional administrative appointment as Acting Associate Dean, J. B. Speed Scientific School, University of Louisville, Louisville, Kentucky.

January 1987 - Present: Professor, Department of Industrial Engineering, J. B. Speed Scientific School, University of Louisville, Louisville, Kentucky.

May 1986 - December 1993: Additional administrative appointment as Chairman, Department of Industrial Engineering, Speed Scientific School, University of Louisville, Louisville, Kentucky.

June 1979 - December 1986: Associate Professor of Industrial Engineering, J. B. Speed Scientific School, University of Louisville, Louisville, Kentucky. (Tenured July 1979).

October 1979 - July 1981: Additional Administrative appointment as Acting Chairman of the Department of Industrial Engineering.

July 1975 - May 1979: Assistant Professor of Engineering Management/Industrial Engineering, J. B. Speed Scientific School, University of Louisville, Louisville, Kentucky.

June 1978 - August 1978: NASA-ASEE Summer Research Faculty Fellow, George C. Marshall Space Flight Center, Huntsville, Alabama.

June 1977 - August 1977: NASA-ASEE Summer Research Faculty Fellow, George C. Marshall Space Flight Center, Huntsville, Alabama.

October 1975 - Present: Consultant in the areas of facilities planning and design, materials handling, system analysis, and industrial engineering.

September 1973 - August 1975: Instructor (Industrial and Systems Engineering), The University of Alabama in Huntsville, Huntsville, Alabama.

September 1970 - August 1973: Graduate Research Assistant (Industrial and Systems Engineering Department), The University of Alabama in Huntsville, Huntsville, Alabama.

## A CHRONOLOGY OF PUBLICATIONS & PRESENTATIONS

"A Methodology for Routing Solid Waste Collection," A Thesis for the Degree of Master of Science in Engineering, August 1971.

"Refuse Collection Operations Study," UARI Research Report #103, February 1971, with R. M. Wyskida and J. L. Mercier.

"Refuse Collection Routing Model Refinements," UAH Research Committee Report, August 1972, with R. M. Wyskida and E. J. Wilfong.

"Huntsville's Solid Waste Collection Problem," TIMS Interfaces, August 1972, with J. P. Ignizio and R. M. Wyskida.

"A Rationale for Heuristic Program Selection and Evaluation," Industrial Engineering, Volume 4, Number 6, June 1972, with J. P. Ignizio and R. M. Wyskida.

"Development of Superimposed Dynamic Cushioning Curves," Proceedings of the Third Annual AMC Packaging Seminar, U. S. Army Natick Laboratory, Natick, Mass., 1974, with Don McDaniel and R. M. Wyskida.

"The Development of Superimposed Dynamic Cushioning Functions for Foamed Plastic Containers," presented at the Fall 1974 Joint National Meeting of ORSA/TIMS, San Juan, Puerto Rico, with Don McDaniel and R. M. Wyskida.

"Temperature Sensitive Dynamic Cushioning Function Development and Validation for Hercules Minicel Thermoplastic Foam," UAH Research Report No. 159, Huntsville, Alabama, September 1974, with R. M. Wyskida.

"Statistically Based Procedure for Temperature Sensitive Dynamic Cushioning Curve Development and Validation," 45th Shock and Vibration Symposium, Dayton, Ohio, October 22-25, 1974, with Don McDaniel and R. M. Wyskida.

"Temperature Sensitive Dynamic Cushioning Function Development and Validation for Polyester and Polyether Type Polyurethane Foam," Final Technical Report, Volume III, U. S. Army Missile Command, Contract Number DAAH01-74-C-0186, November 1974, with R. M. Wyskida and J. D. Bynum.

"Development and Application of Confidence Intervals and Prediction Limits on Dynamic Cushioning Functions for Selected Temperature Sensitive Cushioning Materials," Final Technical Report, U. S. Army Missile Command, Contract Number DAAH01-75-C-0113, October 1975, with R. M. Wyskida, J. B. Bynum, and J. D. Johannes.

"Temperature Sensitive Dynamic Cushioning Function Development and Validation for Blocksom Rubberized Hair," Final Technical Report, Volume III, U. S. Army Missile Command, Contract Number DAAH01-75-C-0113, June 1975, with R. M. Wyskida and J. D. Bynum.

"Temperature Sensitive Dynamic Cushioning Function Development and Validation for Dow Ethafoam Polyethylene Foam," Final Technical Report, Volume I, U. S. Army Missile Command, Contract Number DAAH01-75-0113, June 1975, with R. M. Wyskida and J. D. Bynum.

"A Statistically Based Procedure for Temperature Sensitive Dynamic Cushioning Curve Development and Validation," The Shock and Vibration Bulletin, 45, 4, 1975, with Don McDaniel and R. M. Wyskida.

"A Heuristic Procedure for Solving Large-Scale, Real World M-Postmen Problems," unpublished Ph.D. Dissertation, The University of Alabama in Huntsville, November 1975.

"Faculty/Course Scheduling via Goal Programming," presented at the Fall 1975 Joint National Meeting of ORSA/TIMS, Las Vegas, Nevada, with R. M. Wyskida.

"MCDM Applications to Emergency Medical Services," presented in the Fall 1976 Joint National Meeting of ORSA/TIMS, Miami, Florida, with O. El-Refai.

"Container Cushioning Design Engineers User's Manual (HP-9810A Version)," MICOM Report # RL-CR-76-7, Volume II, with R. M. Wyskida and J. D. Johannes.

"The Enumeration and Evaluation of Optional Uses of the Space Shuttle External Tank," NASA Internal Report, Advanced Systems Group, Payload Studies Office, George C. Marshall Space Flight Center, Huntsville, Alabama, August 1977.

"Heuristic Procedure for Approximating Solutions to Large-Scale, Real World Routing Problems," Proceedings of the First International Conference on Mathematical Modeling, August 29-September 1, 1977, St. Louis, Missouri, with R. M. Wyskida.

"Combined Arms Wargaming Simulation," presented at the Fall 1977 Joint National Meeting of ORSA/TIMS, Atlanta, Georgia, with Major Ernest L. Childs.

"A Practical Case Study for Productivity Improvement in the Urban Public Services Sector," Proceedings of the 29th Annual Conference of the AIIE, Toronto, Canada, May 1978, with D. J. Hagerty.

"How to Start an Engineering Management Program: The Louisville Experience," presented at the 86th Annual Conference of ASEE, Vancouver, British Columbia, Canada, June 1978, with O. El-Refai and Dara Childs.

"The Feasibility of Mathematical Modeling for Optimizing Nuclide Waste Mix for Disposal in Space," NASA Internal Report, Space Systems Group, Program Development Office, George C. Marshall Space Flight Center, Huntsville, Alabama, August 1978.

"Computational Experiences with WRAP: A Fixed Charge Programming Model for Energy from Waste Systems," Proceedings of the Second International Conference on Mathematical Modeling, St. Louis, Mo., July 1979.

"An Assessment of Energy and Materials Recovery from Kentucky's Solid Waste Stream," a report submitted to the Governor of Kentucky and the 1980 General Assembly, Kentucky Department of Energy, with D. F. Holmes, J. E. Jones, and T. Crawford, February 1980.

"Statistical Analysis of Polyethylene Foam Temperature Reduction Methods," presented at the 51st Shock and Vibration Symposium in October 1980, San Diego, California, with R. M. Wyskida and J. D. Johannes.

"Computer Estimation of Construction Manpower Requirements for the Synthetic Fuels Industry," presented at the 1st International and 4th National Conference on Computers and Industrial Engineering, March 10-12, 1982, Orlando, Florida.

"An Assessment of the Hazardous Waste Treatment/Industrial Park Concept," Kentucky Department of Energy, with D. F. Holmes, and H. G. Enoch, January 1982.

"Management Engineering Studies of Commercial Activities at the U. S. Naval Ordnance Station, Louisville," Final Contract Report, Volumes I and II, Contract # N00197-82-C-0027, October 1982, with R. L. Keesee and H. R. Leep.

"CAM on Campus: How Good is It?," CAD/CAM Technology, Volume 2, Number 1, Spring 1983, with Herman Leep.

"Solving Multifacility Location Problems to Minimize Material Handling Costs," Proceedings of the 1983 Annual Conference of IIE, Louisville, Kentucky, May 1983, with R. A. Lichtefeld and T. L. Ward.

"Study of Generation and Composition of Solid Wastes in Jefferson County, Kentucky," Final contract report submitted to the Environmental Policy Office of Jefferson County, Kentucky, March 1984, with D. J. Hagerty.

"A Survey of Flexible Manufacturing Methods Applied in Metalworking Industries," presented at the 21st Annual Meeting and Technical Conference, Numerical Control Society, March 25-28, 1984, with H. R. Leep and D. K. Hagan.

"Innovative Improvement Procedures for Solving Quadratic Assignment Problems," Proceedings of the 1984 Annual Conference of the IIE, Chicago, Illinois, May 1984, subsequently published in Computerized Facilities Planning: Selected Readings, H. L. Hales, ed., Industrial Engineering and Management Press, Norcross, GA 1985, with R. A. Rankin and T. L. Ward of the University of Louisville, and R. Gupta and R. Dutton of SUNY at Buffalo.

"A Fuzzy Set Approach to Layout Analysis," Proceedings of the 1985 Annual Conference of IIE, Los Angeles, California, May 1985, with W. Karwowski and G. W. Evans.

"The Quadratic Assignment Problem: Applications and Solution Techniques," Newsletter of the Operations Research Division of the IIE, Vol. XX, No. 2, Fall 1985, with Gerald W. Evans.

"Computer Aided Facility Location," Computers in Industrial Engineering, Vol. 10, No. 3, 215-225, 1986, with R. A. Lichtefeld and T. L. Ward.

"Layout Analysis and Design Using Fuzzy Methodologies," presented at the ORSA/TIMS Conference, Los Angeles, 1986, with G. W. Evans and W. Karwowski.

"Computer Aided Manufacturing Research at the University of Louisville Factory Automation Laboratory," Proceedings of the 1986 conference on University Programs in Computer Aided Engineering, Design and Manufacturing, Virginia Polytechnic Institute and State University, August 1986, with H. R. Leep, P. A. S. Ralston, and T. L. Ward.

"Safety Monitoring Strategies in the Design and Utilization of Robotic Workcells," Proceedings of the Ninth International Conference on Production Research, Cincinnati, Ohio, August 1987, with H. R. Parsaei and W. Karwowski.

"State of the Art Modeling Techniques for AGVS Design and Operation," Proceedings of the Material Handling Focus '87 Research Forum, Georgia Institute of Technology, September 1987, with G. W. Evans.

"Assembly Line Design and Evaluation for a GE Gas Range Plant in Mexico," Final contract report submitted to the General Electric Company, September 1987, with S. M. Alexander, G. W. Evans, H. R. Leep, and J. S. Usher.

"The State of the Art in AGV Systems Analysis and Planning," Proceedings of AGVS '87, Material Handling Institute, Pittsburgh, PA, October 27-29, 1987, with G. W. Evans.

"Solving Quadratic Assignment Problems by 'Simulated Annealing'," IIE Transactions, Vol. 19, No. 1, pp. 107-119, 1987, with T. L. Ward.

"A Layout Design Heuristic Employing the Theory of Fuzzy Sets," International Journal of Production Research, Vol. 25, No. 10, pp. 1431-1450, 1987, with G. W. Evans and W. Karwowski.

"AGV Flow Path Design and Load Transfer Point Location," Proceedings of the 1988 Annual Conference of IIE, Orlando, Florida, 1988, with J. S. Usher and G. W. Evans.

"A Methodology for Economic Justification of Flexible Manufacturing Systems," Computers and Industrial Engineering, Vol. 15, Nos. 1-4, pp. 117-122, 1988, with H. R. Parsaei, W. Karwowski, and A. J. Walsh.

"A Model for Selecting and Evaluating Flexible Automation Systems," Proceedings of the 1988 Integrated Systems Conference, St. Louis, Mo., Institute of Industrial Engineers, 1988, with H. R. Parsaei.

"A Justification Method for Advanced Manufacturing Systems," Proceedings of the Third International Conference on Robotics and Factories of the Future, Southfield, MI, August 1988, with H. R. Parsaei and W. Karwowski.

"A Justification Methodology for Automated Manufacturing Technologies," Computers and

Industrial Engineering, Vol. 16, No. 3, pp. 363-373, 1989, with H. R. Parsaei.

"A Fuzzy Linguistic Approach to Implementing a Strategy for Computer Integrated Manufacturing," International Journal of Fuzzy Sets and Systems, Vol. 42, 1991, pp. 191-204, with H. R. Parsaei.

"The Use of Case Studies in Teaching Materials Handling System Design," Materials Handling Teachers' Institute, New Jersey Institute of Technology, Newark, NJ, June 1991.

"Use of Fuzzy Linguistic Variables in the Strategic Selection of Flexible Automation Alternatives," TIMS XXX - SOBRAPO XXII Joint International Meeting, Rio De Janiero, Brazil, July 15-17, 1991.

"Evaluation of Restaurant Design through Computerized Analysis: An Analysis of the 90 Series Restaurant," Final Contract Report to KFC, Inc., September 1991, 81 pages, with J. S. Usher, G. W. Evans, and R. B. Wrightington.

"KFCflow: Tutorial and Reference Manual," Final Contract Report to KFC, Inc., September 1991, 62 pages, with J. S. Usher, G. W. Evans, and R. B. Wrightington.

"A New Classification of Methodologies for Economic Justification of Computer Integrated Manufacturing Systems," Proceedings of the ISRAM '92 Conference, 1992, Sante Fe, New Mexico, with H. R. Parsaei and S. Kolli.

"Engineering Economic Consideration of Qualitative Factors Using Fuzzy Linguistic Variables," Proceedings of the First IIE Research Conference, Chicago, IL, May 20-21, 1992.

"The Control of Material Handling Systems by Fuzzy Logic," in Progress in Material Handling Research: 1992, R. J. Graves, L. M. McGinnis, R. E. Ward, and M. R. Wilhelm, Editors, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1993.

"Defining and Measuring AGVS Reliability and Availability," Proceedings of PROMAT 93 Educational Forum, MHIA, Chicago, IL, February 1993, with J. S. Usher. "Using material flow and information flow to evaluate work center locations," Proceedings of PROMAT 93 Educational Forum, MHIA, Chicago, IL, February 1993.

"Multiattribute Decision Methods for the Evaluation of Advanced Manufacturing Systems," Proceedings of the 2nd IIE Research Conference, Los Angeles, CA, May 1993, with S. S. Kolli and H. R. Parsaei.

"Progress on Quantitative Analysis of Qualitative Factors in Engineering Economy," Engineering Economy IE News, Vol. XXVII, No. 2, 1993, with H. R. Parsaei.

"Application of Outranking Methods to Economic and Financial Justification of CIM Systems," Computers and Industrial Engineering, Vol. 25, Nos. 1-4, pp. 357-360, 1993, with H. R. Parsaei and S. S. Kolli.

"Selection of Waste Management Technologies to Implement Manufacturing Pollution Prevention Strategies," International Journal of Environmentally Conscious Manufacturing, Vol. 2, No. 2, pp. 41-47, 1993, with H. R. Parsaei, M. Fleischman, J. Watters, and A. Kaltenhauser.

"Development of a Recommended Industry Practice for Defining and Measuring AGVS Reliability and Availability," with J. S. Usher, Progress in Material Handling Research: 1994, R. J. Graves, L. M. McGinnis, R. E. Ward, and M. R. Wilhelm, Editors, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1995.

" 'Irreducible' Analysis by Use of Fuzzy Linguistic Variables," *Journal of Engineering Valuation and Cost Analysis* , Vol. 1, pp. 3-16, 1996, with H. R. Parsaei.

"Facility Layout Design Employing Fuzzy Linguistic Variables and Basic Fractals," *Proceedings of the EUFIT 95 Conference*, Aachen, Germany, August 28-31, 1995, with T. C. Whyte.

"The Use of Fuzzy Linguistic Variables in Facility Layout Design," presented at the INFORMS Fall 95 National Meeting, New Orleans, October 1995.

"An Empirical Study of the Closest Open Location Rule' for AS/RS Storage Assignments," with J. L. Shaw, in *Progress in Material Handling Research: 1996*, R. J. Graves, L. M. McGinnis, R. E. Ward, and M. R. Wilhelm, Editors, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1997.

"A Characterization Study of the Sheet Walking Problem," final technical report to United Pentek, Inc., May 1998.

"The Closest Open Storage Location Assignment Rule in AS/RS Revisited," with J. L. Shaw and J. S. Usher, presented at the Institute of Industrial Engineers Research Conference and published in the proceedings, May 1998, Banff, Canada.

"A Retrospective of Previous Colloquia Research Foci," in *Progress in Material Handling Research: 1998*, R. J. Graves, L. M. McGinnis, R. E. Ward, and M. R. Wilhelm, Editors, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1999.

"Analytical Modeling of the Closest Open Location Rule for AS/RS Storage Location Assignments," with J. L. Shaw, J. S. Usher and M. S. Jacobson, in *Progress in Material Handling Research: 1998*, R. J. Graves, L. M. McGinnis, R. E. Ward, and M. R. Wilhelm, Editors, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1999.

"The Use of Fuzzy Methodologies and Space-Filling Curves in Facility Layout Design," with T. C. Whyte, presented at the Institute of Industrial Engineers Research Conference and published in the proceedings, May 1999, Phoenix, Arizona.

"A Performability Index for Estimating Material Handling System Reliability," with J. S. Usher, W. E. Biles, and W. Prechatavanit, presented at the Flexible Automation and Intelligent Manufacturing (FAIM) Conference, and published in the proceedings (Begell House publishers), June 1999, Tilburg, The Netherlands.

"Modeling the Effects of Component Failure On Material Handling System Performance," with S. W. Kim and J. S. Usher, presented at the 6<sup>th</sup> international Colloquium on Material Handling Research, York Pennsylvania, June 2000, and published in *Progress in Material Handling Research: 200*, R. J. Graves, L. M. McGinnis, R. E. Ward, and M. R. Wilhelm, Editors, The Material Handling Institute, Charlotte, NC, 2001.

"Simulation Modeling in the Design and Control of a Merge Conveyor," with T. F. El-Shiekh, presented at the INFORMS Fall 2000 National Meeting, San Antonio, November 2000.

"A Geometrical Approach to Computing Expected Cycle Times for Class-Based Storage Layouts in AS/RS," with J. Ashayeri, R. M. Heuts, M. W. T. Valkenburg, and H. C. Veraart, *International Journal of Production Research*, Vol. 40, No. 17, November 2002, pp. 4467-4483.

"Experimentation with an Application of Fuzzy Linguistic Variables in the Selection of Capital Investment Alternatives," with J. Ashayeri, submitted for publication in the *Journal of Engineering Valuation and Cost Analysis*, November 2001.

'On the Determination of Class-based Storage Assignments in an AS/RS having two I/O Locations,' with J. Ashayeri, R. M. Heuts, and M. Beekhof, , in *Progress in Material Handling Research: 2002*, R. Meller, M. K. Ogle, B. A. Peters, G. D. Taylor, and J. S. Usher, Editors, The Material Handling Institute, Charlotte, NC, 2003.

'High Volume, Automated, Picking and Replenishment Systems: Analysis and Concepts,' with R. J. Graves, L. F. McGinnis, and R. E. Ward, in *Progress in Material Handling Research: 2002*, R. Meller, M. K. Ogle, B. A. Peters, G. D. Taylor, and J. S. Usher, Editors, The Material Handling Institute, Charlotte N.C., 2003

'Teaching Graduate Level Facilities Planning and Material Handling: Material Flow Systems Design (IE 650),' presented at the Material Handling Teacher's Institute, University of Louisville, June 24, 2003.

## BOOKS

Proceedings of the First International Conference on Ergonomics of Advanced Manufacturing and Hybrid Automated Systems, Elsevier Science Publishers, Amsterdam, August 1988, co-editors W. Karwowski and H. R. Parsaei.

Applications of Fuzzy Set Methodologies in Industrial Engineering, Elsevier Science Publishers, 1989, Advances in Industrial Engineering Series, co-editors Waldemar Karwowski and Gerald W. Evans.

Material Handling in the 90's, Proceedings of the First Colloquium on Material Handling Research, Springer-Verlag, Berlin, 1991, co-editors R. J. Graves, L. M. McGinnis, and R. E. Ward.

Progress in Material Handling Research: 1992, co-editors R. J. Graves, L. M. McGinnis, and R. E. Ward, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1993.

Progress in Material Handling Research: 1994, co-editors R. J. Graves, L. M. McGinnis, and R. E. Ward, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1995.

Progress in Material Handling Research: 1996, co-editors R. J. Graves, L. M. McGinnis, and R. E. Ward, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1997.

Progress in Material Handling Research: 1998, co-editors R. J. Graves, L. M. McGinnis, and R. E. Ward, Braun-Brumfield Publishers, Ann Arbor, Michigan, 1999.

Progress in Material Handling Research: 2000, co-editors R. J. Graves, L. M. McGinnis, M. K. Ogle, B. A. Peters, and R.E. Ward, Material Handling Institute, Charlotte, NC, 2001.

## CHAPTERS IN BOOKS

"Innovative Improvement Procedures for Solving Quadratic Assignment Problems," in Computerized Facilities Planning: Selected Readings, H. L. Hales, Ed., Industrial Engineering and Management Press, Norcross, GA 1985, with R. A. Rankin and T. L. Ward of the University of Louisville, and R. Gupta and R. Dutton of SUNY at Buffalo.

"Chapter 10: Economic Analysis," The Warehouse Management Handbook, J. A. Tompkins and J. D. Smith, Eds., McGraw-Hill, New York, 1988, with T. L. Ward.

"A Decision-Making Methodology for Selecting Among Flexible Automation Alternatives," in Advances in Computer Integrated Manufacturing, A. A. Aswad, Editor, Industrial Engineering Press, 1988, with H. R. Parsaei and W. Karwowski.



Editor, "ANSI Z94.6 Facility Planning," in Industrial Engineering Terminology: Revised Edition, American National Standard, Industrial Engineering and Management Press, Norcross, GA, July 1989.

"A Decision-Making Methodology for Selecting Among Flexible Automation Alternatives," in Advances in Computer Integrated Manufacturing, A. A. Aswad, Ed., Industrial Engineering and Management Press, 1991, with H. R. Parsaei and W. Karwowski.

"Economic Justification of Advanced Automated Manufacturing Systems," in Human Factors in Advanced Manufacturing, W. Karwowski and G. Salvendy, Eds., John Wiley & Sons, 1992, with H. R. Parsaei and S. Kolli.

"A Classification of Justification Techniques for Advanced Manufacturing Technology Systems," in Economic and Financial Justification of Advanced Manufacturing Technologies, H. R. Parsaei, W. G. Sullivan, and T. R. Hanley, Eds., Elsevier Science Publishers, 1992, with H. R. Parsaei, S. Kolli, and R. G. Soni.

"Chapter 14: Economic Analysis," The Warehouse Management Handbook, Second Edition, J. A. Tompkins and J. D. Smith, Eds., McGraw-Hill, New York, 1998, with T. L. Ward.

"An Approximate Method for Computing AGVS Availability," with J. S. Usher, Progress in Material Handling Practice: 1997, D. B. Pratt, C. J. Malmberg, G. D. Taylor, and J. S. Usher, Eds., The Material Handling Institute, Charlotte, North Carolina, 1998.

"Chapter 33: Material Handling," Mechanical Engineers Handbook, Second Edition, Myer Kutz, Ed., John Wiley & Sons, 1998, with W. E. Biles and M. E. Zohdi.

#### FUNDED RESEARCH

"Planning for Energy from Solid Waste," Kentucky Center for Energy Research, August 1978, \$27,600.

"Continuation Funding for Energy from Solid Waste," Kentucky Department of Energy, April 1979, \$26,000.

"Continuation Funding for Energy from Waste," Kentucky Department of Energy, April 1980, \$28,850.

"Continuation Funding for Energy from Waste," Kentucky Department of Energy, April 1981, \$30,472.

"Management Engineering Studies of Commercial Activities," U. S. Naval Ordnance Station, Louisville, October 1981, with R. L. Keesee and H. R. Leep, \$99,578.

"Technology Assessment and Economics of Coal Preparation as a Strategy for Meeting Proposed Environmental Regulations," Kentucky Department of Energy, May 1982, \$19,000.

"Educational Equipment Grant," the Material Handling Education Fund of the Material Handling Institute, June 1983, \$350.

"Study of Generation and Composition of Solid Wastes in Jefferson County, Kentucky," Environmental Policy Office, Jefferson County, Kentucky. November 1983, with D. J. Hagerty, \$15,000.

Proposed to two different companies, Span Tech Corporation and CIMCORP, Inc., that they donate equipment to the Factory Automation Laboratory, 1986. Equipment donated was valued in excess of \$120,000.

"Preliminary Design of an Assembly System for the 'MABE' Gas Range Manufacturing Plant, Phase I," General Electric Company, May 1987, \$8,008.

"Preliminary Design of an Assembly System for the 'MABE' Gas Range Manufacturing Plant, Phase II," General Electric Company, September 1987, \$24,297.

"Evaluation of Restaurant Designs Through Computerized Analysis," KFC, Inc., January 1991, with J. S. Usher and G. W. Evans, \$30,500.

"Assignment agreement - Dr. F. H. Grant," National Science Foundation, July 1 - November 30, 1993, \$222,642.

"Product Realization Affiliate Institutions Program," REALIZATION Consortium ( funded through an NSF TRP grant to Worcester Polytechnic Institute, et. al.), September 1, 1995 - May 30, 1996, with J. S. Usher, G. Prater, and M. Day, \$29,276.

"A Characterization Study of the Sheet Walking Problem," United Pentek, Inc., January 1998, with W. P. Hnat, G. Prater, and J. S. Usher, \$21,903.

Grant to support web-enhancements, faculty development and technical support for two courses (IE 415 and IE 650), March 1999, Office of the Provost, University of Louisville, \$2500 computer hardware plus \$500 cash award for support of the project.

## REVIEWER FOR SCHOLARLY JOURNALS AND FUNDING AGENCIES

IIE Transactions  
International Journal of Human Factors in Manufacturing  
International Journal of Production Research  
Computers and Industrial Engineering  
European Journal of Operations Research  
International Journal of Fuzzy Sets and Systems  
The Engineering Economist  
Decision Sciences  
INFORMS Journal on Computing  
McGraw-Hill Publishing  
The National Science Foundation

## GRADUATE THESES AND PROJECTS DIRECTED

"Consideration and Development of a Model for Determining the First-Time Major Maintenance of Manufacturing Equipment," J. L. Aswani, Master of Engineering in Engineering Management, November 1976.

"Combined Arms Wargame Simulation Model," Maj. E. L. Childs, Master of Science in Engineering Management, August 1977.

"Simulation Model of the Emergency Service Dispatch Function," A. Inkatanuwat, Master of Engineering in Engineering Management, May 1978.

"Location Analysis for Transfer Stations to Serve the Heat Recovery Incinerator in Jefferson County," G. C. Benson, Master of Engineering in Industrial Engineering, May 1978.

"Computer Simulation of Cigarette and Filter Production to Aid in Machine Utilization and Inventory Control," L. S. Chamberlain, Master of Engineering in Engineering Management, August 1979.

"Optimal Time Periods Between Preventive Maintenance and Indepth Cleaning Applications on X2-4350 Packer," R. T. Bakan, Master of Engineering in Engineering Management, May 1979.

"Goal Programming - State of the Art," L. G. Vowels, Master of Science in Engineering Management, October 1980.

"A Linear Programming Approach to an Optimal Fuel Mix Problem," S. M. Reed, Master of Engineering in Industrial Engineering, May 1981.

"A Single Depot Location Analysis: An Iterative Vehicle Scheduling Approach," J. S. Usher, Master of Engineering in Industrial Engineering, May 1981.

"Calculator Algorithms for Applied Cost Engineering," G. M. Rogers, Master of Engineering in Engineering Management, May 1981.

"Computer Simulation Model to Aid in Predicting Future Plant Capacity Requirements," G. R. Lachut, Master of Engineering in Engineering Management, May 1981.

"An Analysis of A Target Designation System on an Armored Combat Vehicle," W. L. Szymurski, Master of Science in Engineering Management, July 1981.

"Engineering Management Applications to Hydrologic Studies," B. K. McClellan, Master of Science in Engineering Management, August 1981.

"Testing and Evaluation of an Industrial Chromate Recovery System," B. G. Varney, Master of Engineering in Engineering Management, August 1981.

"An Investigation of the Application of Linear Goal Programming to Floor Space Allocations," D. R. Watson, Master of Engineering in Industrial Engineering, August 1981.

"An Investigation of an Energy Efficient Household Refrigerator Defrost System," D. L. Sidebottom, Master of Science in Engineering Management, May 1982.

"Experimental Investigation of Activity Priority Assignment in Multi-Project Scheduling," B. A. Mousa, Master of Engineering in Engineering Management, December 1982.

"Analysis and Design of a Job Shop Production Management System," T. V. Barker, Master of Engineering in Engineering Management, December 1982.

"Physical Simulation of an Automated Industrial Facility," C. C. Wall, Master of Engineering in Industrial Engineering, December 1982.

"Utilizing a Microcomputer-Controlled Miniature Robot to Unload a Belt Conveyor," B. T. Hagerty, Master of Engineering in Industrial Engineering, December 1982.

"Refrigerator Cabinet Sealing: Engineering and Manufacturing Response to Sealing Problems," A. F. Smiley, Master of Engineering in Engineering Management, May 1983.

"Linear, Integer Codes for the Solution of Goal Programs," M. Vosough, Master of Engineering in Engineering Management, May 1983.

"A Comparison of Waste Disposal Costs for Nuclear Versus Coal Electric Generating Plants," S. Azarnia, Master of Engineering in Engineering Management, May 1983.

"Conversion of a Miniature Milling Machine to Computer Numerical Control," D. A. Whitehouse, Master of Engineering in Industrial Engineering, August 1983.

"Graphical CRAFT: An Interactive Computer Layout Code," C. E. Cordy, Master of Engineering in Industrial Engineering, May 1984.

"Technical and Economic Assessment of Coal Preparation," S. W. Gregory, Master of Engineering in Industrial Engineering, August 1984.

"Utilizing a Microcomputer-Controlled Miniature Robot to Sort and Palletize Packages," Martin Greer, Master of Engineering in Industrial Engineering, December 1984.

"Extensions of Computer Aided Facility Location Analysis," Alan Farner, Master of Engineering in Industrial Engineering, August 1985.

"Job Satisfaction of Corps' Engineers," Patricia Bertsch, Master of Engineering in Engineering Management, May 1986.

"Formulation Issues in Knowledge Base Development for Material Handling Equipment Selection in FMS," Felecia Coleman, Master of Engineering in Engineering Management, May 1986.

"Developing Expert System Rules for the Selection of Small Parts Material Handling Systems," Lawrence Head, Master of Engineering in Industrial Engineering, December 1986.

"A SIMAN Simulation of a Receiving and Distribution System Design," Lori Cook, Master of Engineering in Industrial Engineering, December 1986.

"Computerization of a Fuzzy Subset Approach to Facility Layout," Marilyn Davis Adams, Master of Engineering in Industrial Engineering, May 1987.

"Integration of a Vision System and a Tactile Sensing Robot Gripper," Steven Legler, Master of Engineering in Mechanical Engineering, August 1987.

"The Design of the Control Architecture for an Automated Manufacturing Cell," Joseph Kleine-Kracht, Master of Engineering in Industrial Engineering, December 1987.

"Computer Aided Facility Location Analysis," R. A. Lichtefeld, Master of Engineering in Industrial Engineering, May 1989.

"An Experimental Investigation of the Properties of Nylon 11 in the Selective Laser Sintering Process for Rapid Prototyping," N. Diop, Master of Science in Industrial Engineering, May 1996.

"An Empirical Analysis of the 'Closest Open Location' Selection Algorithm Used in Automated S/R Systems," Jerry L. Shaw, Master of Science in Industrial Engineering, July 1996.

"Army Advertisement Exploration: A Decision Risk Analysis Case Study," Teresa C. Monroe, Master of Science in Industrial Engineering, November 1996.

"A Fuzzy Linguistic Variable Based Approach to Facility Layout," Todd Whyte, Ph.D., August 1999.

“Shipping Capacity Requirements at DELL Computer Corporation,” Jon H. Amis, Master of Engineering Project Report, May 2002.

“Third Party Logistics Warehouse Storage Analysis,” Kelly Wright, Master of Engineering Project Report, May 2002.

“Development of a Simulation Model for Controlled Spacing Induction from Multiple Conveyor Lines,” Taimour El-Cheikh, Master of Science in Industrial Engineering, August 2002.

“An Experimental Design to Test the Affects of Percent Water Content in Clay on Extruded Stoneware,” Shawn Michael Ottman, Master of Engineering Project Report, December 2002.

“Particle Swarm Optimization As Applied to the Quadratic Assignment Problem,” Jeffrey M. Hess, Master of Engineering Project Report, May 2003.

#### CONSULTING CLIENTS

Greenbaum, Doll and MacDonald, Attorneys at Law, Lexington, KY  
Charles Wible, Attorney at Law, Owensboro, KY  
Frost & Jacobs, LLP, Cincinnati, OH  
Nicolas, Welsh & Hayward, Attorneys at Law, Louisville, KY  
Ford Kentucky Truck Plant, Louisville, KY  
General Electric Company, Appliance Park, Louisville, KY  
Haden Schweitzer Corp., Material Handling Division, Madison Heights, MI  
O'Neal Metals, Incorporated, Louisville, KY  
Southworth Products Corporation, Manila, AR  
Infra Pak, Dallas, Inc., Dallas, TX  
Southworth Systems, Inc., Portland, ME  
J. C. Moag Corporation, Jeffersonville, IN  
Pentek, Incorporated, Indianapolis, IN  
Accu-sort Systems, Inc., Philadelphia, PA  
The University of Pittsburgh, Pittsburgh, PA  
The Material Handling Industries of America, Charlotte, NC  
Lee Engineering Corporation, Pawtucket, Rhode Island  
Jones Plastic and Engineering Corporation, Louisville, KY  
Bushman Equipment Company, Milwaukee, WI  
Safetran Systems Corporation, Louisville, KY  
HK Systems, Inc., Hebron, KY

#### HONORS, AWARDS, AND MISCELLANEOUS PROFESSIONAL ACTIVITIES

Listed in 1972 Awards Volume of Outstanding Young Men of America.

Director of Community Relations for Huntsville Chapter #69, IIE in 1974.

Nominated by UAH Engineering Society for their "Outstanding Professor" Award in 1974.

Elected to the Graduate Faculty, University of Louisville, 1976.

Honorary Member and Faculty Advisor to Theta Tau Fraternity, 1976.

Co-chairman of the first regional seminar on Maintenance Management, sponsored by the Institute of Industrial Engineers (IIE), January 1976.

Founder of and Faculty Advisor to the University of Louisville Chapter #902 of IIE, 1976 - 1987.

Member of the Board of Directors, Louisville Chapter #18, IIE from 1976 to 1984.

Member of the Society of Sigma Xi, April 1977.

Nominated as Outstanding Professor at the J. B. Speed Scientific School by Tau Beta Pi, 1977.

Delegate from Louisville Chapter #18 to the IIE Annual Conventions in 1977, 1978, 1982, 1983, and 1984.

Newsletter editor for the Operations Research Division of IIE, 1978-1980.

Member and faculty advisor to Sigma Phi Epsilon Fraternity, 1978.

Publications Chairman for the Operations Research Division of IIE, 1980-1981.

Inducted as Eminent Engineer into Tau Beta Pi, April 1981.

Distinguished Engineer Award, National Engineers Week, IIE Chapter #18, February 1982, and again February 1987.

Certificate of Teaching Excellence, University of Louisville, May 1982.

Elected to the University of Louisville Faculty Senate, May 1983.

General Conference Chairman, 1983 IIE Annual Conference and Productivity Expo, May 22-26, 1983, Louisville, Kentucky.

Invited Participant in the Advanced Institute for Material Handling Teachers, Auburn University, Alabama, June 12-17, 1983.

Appointed subcommittee chairman for the 1989 revision of ANSI Standard Z94.6 (Facility Planning) of the Standard Z94 (Industrial Engineering Terminology), 1984.

Elected to the College-Industry Council on Material Handling Education (CIC-MHE), of the Material Handling Institute, January 1984.

Appointed Newsletter Editor for the Facility Planning and Design Division of IIE, 1985-86.

Member of Alpha Pi Mu (Industrial Engineering Honorary), April 1987.

Appointed Program Chairman for the Facility Planning and Design Division of IIE, 1987-88.

Elected President of the College-Industry Council on Material Handling Education (CIC-MHE), of the Material Handling Institute (January 1988 - December 1989 term of office).

Appointed to serve on the U of L Planning Advisory Committee for Strategic Planning (University-wide committee), October 21, 1988 through February 15, 1989.

Received the U of L Outstanding Performance Award for Administrators, August 30, 1989.

Received an award of recognition for "personal devotion and outstanding contributions as President 1988-89 of the College-Industry Council on Material Handling Education."

Appointed as Industrial Engineering Program Evaluator (IIE), Accreditation Board for Engineering and Technology (ABET), 1990 - Present.

Elected Director of the Facilities Planning and Design Division of IIE for 1990-91.

Appointed to the Manufacturing Technology Committee of the Louisville Advanced Technology Council, 1990.

Received a special citation by the Facilities Planning and Design Division of the Institute of Industrial Engineers for "Significant accomplishments in the area of facilities planning and design," International Conference of the Institute of Industrial Engineers, Chicago, IL, May 1992.

Elected Fellow of the Institute of Industrial Engineers (IIE), May 1993.

Elected to the Executive Committee of the IIE Council of Industrial Engineering Department Heads, May 1993.

Elected to the Board of Directors, Louisville Advanced Technology Council (an agency of the Louisville Chamber of Commerce), October 1993 - 1999.

Listed in Who's Who in Engineering, 1994.

Appointed Chair, Technology Transfer Committee, Louisville Advanced Technology Council, January 1994.

Listed in the 1998 edition of Who's Who Among America's Teachers, October 1998.

Elected Fellow of the World Academy of Productivity Sciences, 2001

Elected to serve on the Kentucky Statewide EPSCoR Committee representing the Administration of the University of Louisville, April 2003.

Elected a member of the Distinguished Engineering Alumni Academy of the School of Engineering, University of Alabama in Huntsville, May 2003.

## COURSES TAUGHT

Probability and Statistics for Engineers I  
Probability and Statistics for Engineers II  
Operations Research: Deterministic Models (developed a web-supported course)  
Operations Research: Stochastic Models  
Engineering Economy  
Design of Production Systems  
Quantitative Methods in Administrative Science  
Linear Programming  
Fundamentals of Industrial Engineering  
Decision Theory  
Quality Control  
Facilities Location and Layout  
Production Management  
Case Studies in Industrial Engineering  
Material Flow Systems Design (developed a web-supported course)  
IE Capstone Design  
Experimental Design in Engineering