**BRAC University Center for Occupational Safety and Health (BCOSH)**

Brian Peacock

October 30, 2019

**Background**

Bangladesh is a rapidly developing country with a GDP growth of approximately 8% pa. The country’s principle industries are agriculture, textiles (Ready Made Garment manufacturing), construction and shipbuilding plus a broad spectrum of service and support industries. These industries, coupled with the rapid growth, are associated with a significant level of occupational injuries and worker turnover:

<https://www.ilo.org/dhaka/Areasofwork/safety-and-health-at-work/lang--en/index.htm>

It is recognized that the country also faces other major (public health) challenges such as road accidents, environmental pollution and infectious diseases. Occupational safety and health issues are less visible problems that hamper the nation’s aspirations to grow in international standing. Furthermore, employment, albeit with minimal compensation, is usually preferable to unemployment as has been demonstrated extensively throughout South East and East Asia over the past half century.

BRAC University is highly motivated to support the growth of the Bangladesh economy while at the same time contributing to the increase in gainful employment and reduction of occupational safety and health issues.

**Proposa**l

It is proposed that an interdisciplinary Center for Occupational Safety and Health be developed at BRAC University with a mission to provide consulting services to industry and education and training of government and industry managers, health and safety professionals, grass roots safety and health practitioners and individual employees. Initially the education and training initiative would be accomplished through literature and guideline development and distribution, short course programs ranging from three hours to three days to three weeks. Later, it would explore the possibility of expansion into graduate and undergraduate courses, and applied research activity. The communication initiative would be implemented initially by targeted literature on specific hazards.

**Structure**

The Center will be housed in BRAC university facilities and staffed by a combination of University specialists and industry practitioners operating initially on a part time basis. Faculty with backgrounds in medicine, engineering, ergonomics, industrial hygiene, safety and statistics / epidemiology will be needed. Group activity friendly classroom facilities will be complemented by basic laboratory access and field visits. The interdisciplinary Center will be under the joint guidance of a steering committee from BRAC Engineering, Public Health and Business faculties, and invited industry representatives. Where local expertise is not readily available, efforts will be made to engage overseas experts on either visiting or full time bases.

**Special Focus**

The application of Ergonomics (Human Factors Engineering) as the technical underpinning of Occupational Safety and Health teaching and practice would address the physiological, psychological, medical, engineering design, operational, behavioral, statistical and financial bases of safety and health outcomes.

**Development Process**

Government and industry representatives will be solicited to collaborate with the Center staff to contribute to the development, implementation and monitoring of the Center’s activities and growth.

Initial development of the BRAC Center for Occupational Safety and Health would be by extensive research into international precedents and historical Bangladesh initiatives. Next the Center structure would be developed iteratively through the efforts of full and part time staff and through outreach to the University and Industry steering committee members.

It should be emphasized that successful developments will be dependent on a blend of academic and domain knowledge.

Existing courses in Occupational Ergonomics, Safety and Health would be made available for adaptation to local needs.

**Target audiences**

The Center and its activities would be marketed to industry managers through the medium of outreach communications comprising succinct flyers and short presentations both at BRAC University and industry locations. The purpose of this outreach would be to stimulate managers to recommend the Center’s programs and short courses to their employees.

Current BRAC students in Public Health, Engineering and Business would be encouraged to sign up for elective courses in Occupational Ergonomics, Safety and Health.

**Pedagogy**

The education and training initiative would follow contemporary delivery processes of student participation, group activity and objective analysis and reporting practices. Specifically the instructor will develop a theme, groups of between 3 and 5 students would analyze the problem and develop alternative solutions. Finally a “one page report” would be created to succinctly communicate the problem, analysis of available evidence and design of feasible alternative solutions, with due reference to published literature. Presentations of these one page reports to the larger class audience will contribute to the development of communication skills.

**Safety and Health**

Acute incidents comprise high mechanical (plus electrical or thermal) forces over short time periods. Such incidents include falls from a height, vehicle and moving machinery accidents, falling objects, cuts, trapped hands and fingers, scalds and burns etc. More insidious exposures to sustained and repetitive activities frequently result in cumulative trauma disorders / repetitive strain injuries. Whereas the former injuries result mainly from high forces, it is the temporal dimension that is the principal cause of the, also debilitating, latter injuries / illnesses. Individual / demographic susceptibilities such as age, experience and physical resilience also contribute to injury and illness incidence. The former acute injuries require some form of physical protection / guarding whereas the latter (cumulative) conditions are usually preventable by administrative interventions, such as job assignment, enlargement or rotation.

According to Herzberg, workers are (de)motivated by such things as low wages and hazardous working conditions but respond well to increased intrinsic work content. Thus methods to increase the variety of work not only motivate the individual and reduce turnover but also contribute to the resilience and flexibility of the workforce.

**Specific Proposals**

Development of a Bangladesh Center for Occupational Safety and Health (BCOSH)

* Create a working team
* Develop a preliminary plan
* Invite a steering committee
* Develop or adapt measurement tools
* Assess content and successes of similar programs
* Collect and analyze specific safety, health, job satisfaction and productivity data
* Implement evidence based pilot safety and health programs including training, job analysis and intervention
* Evaluate the effectiveness of pilot programs
* Carry out continuous improvement to the analysis tools and intervention methods
* Expand the Occupational Safety and Health programs throughout Bangladesh industry

**Available Attachments**

* Safety, Risk and Resilience Engineering (Undergraduate course)
* Occupational Biomechanics (Undergraduate course)
* Aerospace Human Factors (Undergraduate course)
* Manufacturing Ergonomics (Graduate course)
* Medical Management of Work Related Musculo-Skeletal Disorders
* Book on the Laws and Rules of Ergonomics in Design
* Technology, Employment Practices and Workers (a comparative study of ten cotton spinning plants in five Asian Countries
* Ergonomics and Design for Elderly Singaporeans
* Ergonomics 2018 – A (Singapore) National Strategy for Managing Ergonomics in the Workplace
* The Ergonomics of Production Lines
* Employment Analysis and Design for Elderly Singaporeans
* Work Analysis Tools
* Setting Compliable and Enforceable Ergonomics Standards
* The Employment of Senior Citizens in Singapore
* The Yin and Yang of Ergonomics in Design

**Resume**

Brian Peacock Ph.D., PE, CPE

**Mobile 4045092708 E-mail** brianpeaco@gmail.com

### **Degrees and Certificates**

PhD - Engineering Production - University of Birmingham (1972)

B. Tech - Ergonomics & Cybernetics – Loughborough University (1968)

MCSP - Physiotherapy - Leeds General Infirmary (1961)

PE - Professional Engineer - State of Oklahoma (1983)

CPE - Board of Certification in Professional Ergonomics

Fellow of the Institute of Ergonomics and Human Factors (UK)

Fellow of the Human Factors and Ergonomics Society (USA)

Private pilot - FAA

**Employment**

2011 – 2013 Adjunct Professor, National University of Singapore

2009 – Present Owner, Brian Peacock Ergonomics (BPE) Pte. Ltd.

2009 – 2015 Professor, SIM University, Singapore

2005 - 2009 Professor, Department of Safety Science, Embry Riddle Aeronautical University

* Human Factors, Ergonomics, System Safety, Computer Simulation classes
* Aviation displays, performance with physical encumbrance, UAVs and ethics research

2000 – 2004 Discipline Coordinating Scientist for Space Human Factors Engineering, National Space Biomedical Research Institute, Baylor College of Medicine / NASA

* Space Human Factors science management
* Development of Index of Habitability for space vehicles
* Collaboration with biomechanics, usability, training and lighting laboratories
* Science and Technology Working Group coordination
* Conference and conference presentations coordination

1990 - 2000 Manager, General Motors Manufacturing Ergonomics Laboratory

* Development and implementation of GM manufacturing ergonomics program
  + Extensive interaction with product and manufacturing engineering, management, the unions and plant personnel
    - Development and implementation of global common process for manufacturing ergonomics
      * Frequent visits to European vehicle design and manufacturing organizations
    - Part time assignment to GM Washington Office to develop partnerships with Government, Industry, and Academic Organizations with regard to manufacturing ergonomics

1988 - 1990 Program Manager, GM ACCESS Car, General Motors Corporation

* Coordinated activities of more than a hundred engineers, academics, students, human factors engineers and marketing specialists
* Investigation of physical, cognitive and social requirements of elderly vehicle users
* Development of (200+) vehicle features to satisfy user requirements

1986 - 1988 Manager, Product Human Factors, General Motors Corporation

* Managed Advanced Vehicle Engineering Human Factors Group
* Collaboration with engineers, designers and marketing specialists on vehicle design

1981 - 1986 Associate Professor (Tenured), School of Industrial Engineering, University of Oklahoma

* Ergonomics, Human Factors, Biomechanics graduate and undergraduate classes
* Space suit glove, oil well drilling instrumentation, office ergonomics, biomechanics applied research

1979 - 1981 Associate Professor, Physical Therapy and Physical Education, Dalhousie University, Nova Scotia, Canada

* Ergonomics, biomechanics and statistics classes
* Shift work, biomechanics research

1979 Visiting Lecturer (Sabbatical Leave), Department of Operations Research, Monash University, Melbourne, Australia

* Statistics and Computer simulation

1974 - 1978 Senior Lecturer (Tenured), Department of Industrial Engineering, University of Hong Kong, Hong Kong

* Ergonomics, Human Factors, Statistics, Computer simulation

1968 - 1974 Senior Research Associate, Department of Engineering Production, University of Birmingham, Birmingham, England

* Operational memory, work physiology research
* Statistics advisor to Royal College of General Practitioners

### **Continuing Education**

Computer Simulation (Alion Corporation)

Systems Engineering, HFES Annual Meeting

Software Systems Safety, NASA JSC

Advanced System Safety Practice, NASA JSC

Digital Human Modeling, EAI Inc.

Fault Tree Analysis, Boeing Corporation

Financial Accounting, Oakland University

Corvette Driving School, Mosport, Canada

Oil well Blowout Prevention, University of Oklahoma

Regular attendance at Human Factors, Industrial Engineering and Space Human Factors conferences

**Graduate and Undergraduate Teaching**

1. Graduate Thesis Supervision
2. Intern supervision (GM, NASA)
3. Human Factors
4. Ergonomics
5. Biomechanics
6. Statistics
7. Case Studies in Human Factors and Safety
8. Systems Safety
9. Industrial Engineering
10. Work Analysis and Design Engineering
11. Operations Research
12. Computer Simulation
13. Socio Technical Systems Engineering

**Recent Short Courses**

1. Human Systems Integration, Civil Service College, Singapore, 2011
2. Ergonomics and Design, STK Engineering, Singapore (3 days, 2009, 2010)
3. Ergonomics and Design, ESIS / ACE, Singapore 2010
4. Ergonomics and Design, APCHI, Bali, 2010
5. Automotive Design and Engineering, National Taiwan University of Technology, 2010
6. Ergonomics and Design, Solbridge University, Korea, 2009

**Journal Articles**

1. (with J Howery and G Northam) “ Geometry of Near Mid Air Collisions” Journal of Air Transportation (under review), 2012
2. (with Hartono, M., Tan, K.C., Ishihara, S.) Incorporating Markov chain modelling and QFD into Kansei Engineering applied to services’, International Journal of Human Factors and Ergonomics, Vol. 1, Issue 1, pp. 75-97, 2012
3. (with Hartono, M., Tan, K.C.) ‘Applying Kansei Engineering, the Kano model and QFD to services’, submitted to Management Decision (under review). (2012)
4. (with E Diels and G Northam) “Moral development in Pilot Populations”, International Journal of Applied Aviation Studies. Volume 9, No. 1, 2009
5. (with J Avitabile, G Northam and J Tank ) “ADS-B Utility for Air Traffic Avoidance”, Journal of Air Transportation (2008) **Sorenson Best Paper Award**
6. (with Jen Gwo Chen and Hwa S Jung) "A Fuzzy Sets Modeling Approach for Ergonomic Workload Stress Analysis", International Journal of Industrial Ergonomics 13, 189 – 216, 1994
7. (with J. G. Chen and R. E. Schlegel) "An Observational Technique for Physical Work Stress Analysis", International Journal of Industrial Ergonomics, No.3 (1989)
8. (with R. Roe) "Human Factors in Vehicle Design" Journal of the American Society of Body Engineers Volume. 16 No. 2 (1988)
9. (with R. Glube, M. Miller, and P. Clune) "Police Officers Response to Eight and Twelve Hour Shift Schedules." Ergonomics, Volume 26, No. 5, pp. 479-493 (1983)
10. (with T. Westers, M. Enright, A. Thomas, C. Houlston) "Posture and Vital Capacity" Physiotherapy Canada, 23, 6, 337-340 (1982)
11. (with G. I. Turnbull and L. Ross) "Frequency Analysis of Commercially Available Vibrators." Physiotherapy Canada, 1982, 34, 1, 21-26, 1982
12. (with T. Westers, S. Walsh and K. Nicholson) "Feedback and Maximum Voluntary Contraction": Ergonomics, Volume. 24, No. 3, pp. 223-228, 1981
13. "The Physical Workload Involved in Parcel Handling": Ergonomics, Volume. 23, No. 4, pp. 417 – 424 (1981)
14. "How the Computer Can Help with Fixture Scheduling": Outdoors, Volume. 1, no. 4, pp.30-31 (1978)
15. "Ergonomics Aspects of Hong Kong Public Transport" Hong Kong Engineer, Volume. 6, No. 10, pp. 27-34, 1978
16. (with S. M. Bard) "Smoking and Drinking Habits of Hong Kong University Students - A Longitudinal Study": Journal of Public Health, Volume. 90, pp. 219-225 (1976)
17. (with R. J. F. H. Pinsent, P. Jankowiak, B. Steele and J. Hinsley) "Reported Morbidity and the Weather": Journal of the Royal College of General Practitioners, Volume. 25, pp. 247-251, 1975
18. "Audio Visual Aids in Health Education and the Social Services": Video and Film Communication, December pp. 16-18 (1974)
19. (with R.J.F.H. Pinsent) "A Medical Reconnaissance Service": British Medical Journal, pp. 129-230 (1974)
20. (with R. J. F. H. Pinsent) "Package Programmes for Operational Research in General Practice": Journal of the Royal College of General Practitioners, Volume. 23, pp. 433-445 (1973)
21. (with R. J. F. H. Pinsent) "Going to the Doctor": Journal of the Royal College of General Practitioners, Volume. 23, pp. 428-432 (1973)
22. (with R. J. F. H. Pinsent) "The Summary Card": Journal of the Royal College of General Practitioner, Volume. 23, pp. 413-427. (1973)
23. (with P. Davies) "A Method for the Investigation of Interpolated Information and Time Effects in Short Term Retention”: Ergonomics, Volume. 15, no. 6, pp. 701-704 (1972)
24. (with M. D. Price) "Apparatus for the Investigation of Sensori-Motor Skills": Ergonomics, Volume. 15, no. 1, pp. 89-92, 1972
25. (with W. G. Koster) "The Influence of Intensity of Visual Stimuli on the Psychological Refractory Phase": Acta Psychologica Volume. 30, pp. 232-253 (1969)
26. (with N. S. Kirk, J. S. Ward, E. Asprey, and E. Baker) "Discrimination of Chair Seat Heights": Ergonomics, Volume. 12, no. 3, pp.403-414 (1969)
27. "A Myographic and Photographic Study of Walking with Crutches": Physiotherapy, pp. 264-268 (1966)

**Books**

1. “The Laws and Rules of Ergonomics in Design” Collection of articles from EID (2009)
2. (with W Karwowski) “Automotive Ergonomics” Taylor and Francis (1993)
3. (with N. A. J. Hastings) "Statistical Distributions": Butterworths (1974)
   1. (with N. A. J. Hastings) "Statistical Distributions", Halsted (1978)
   2. (with N. A. J. Hastings) "Statistical Distributions,” Russian Edition (1980)
   3. (with M Evans and N. A. J. Hastings) "Statistical Distributions, Wiley, Second Edition (1993)
   4. (with M Evans and N. A. J. Hastings) "Statistical Distributions, Wiley, Third Edition (2000)
   5. (with C Forbes, M Evans and N. A. J. Hastings) "Statistical Distributions, Wiley, Fourth Edition (2010)

**Book Chapters**

1. Brian Peacock’s Seventeen Steps of Soccer Training, Chapter 10 in The Physics of Soccer, Deji Badiru, iUniverse Press, 2010
2. Brian Peacock’s Soccer Training Clinic, Chapter 9 in The Physics of Soccer, Deji Badiru,iUniverse Press, 2010
3. Habitability Measurement in Space Vehicles and Earth Analogs, Chapter 74 in Stanton et al Handbook of Human Factors and Ergonomics Methods CRC press, 2005
4. Measurement in Manufacturing Ergonomics, Chapter 8 in Handbook of Human Factors Testing and Evaluation, Charlton and O’Brien, Lawrence Erlbaum, 2002
5. Ergonomics Analysis of Sheet Metal Handling – Chapter 7 in Digital Human Modeling for Vehicle and Workplace Design, Chaffin, SAE, 2000
6. Worldwide Corporate Ergonomics Efforts – USA - Chapter 25 in “Ergonomics and Manufacturing”, Karwowski and Salvendy, SME 1998
7. "Job Redesign in the Bindery," pp. 155-160 in "Satisfactions in Work Design" R. G. Sell and P. Shipley (eds), Taylor and Francis, England (1979)
8. (with M. Whitworth) "Human Factors in Fiber Optic Endoscopy": Human Factors and Health Care, R. M. Picket and T. J. Triggs (eds), Chapter 8 (1975)

### **Ergonomics in Design Articles**

1. “Human Variability: Design Operations and Forensics: Six cases”, Ergonomics in Design (under review)
2. “The 6Us of Product Design”, Ergonomics in Design, Vol 18, 2009
3. “Time for Bed: Shift work”, Ergonomics in Design Vol. 17, No 3, 2009
4. “Ethics and Ergonomics : Customer Satisfaction”, (with G Northam and E Diels), Ergonomics in Design, Vol. 16, No. 3, 2008
5. “Just a Moment”, Ergonomics in Design Vol. 15, No 3, 2007
6. “A Look Back: Ergo is more Difficult than Nomos”, Ergonomics in Design, Vol. 15, No 2, 2007
7. (with G Northam) “You’ve Got to Attend to Everything: Workload and Flying” Ergonomics in Design, Vol. 14, No. 4, 2006
8. (with M. Fogleman) “Boomer, Sooner and Donders” Ergonomics in Design, Vol. 14, No. 3, 2006
9. “Whose Agenda is it Anyway: Roberts Rules of Order,” Ergonomics in Design, Vol. 13, No 4, 2005
10. (with Laux, L) “Do Not Use This While Sleeping: The Role of Facilitators” Ergonomics in Design, Vol. 13, No 3, 2005
11. “Unwanted Energy: Vibration” Ergonomics in Design, Vol. 13, No. 2, 2005
12. “Remember Hawthorn”, Ergonomics in Design, Vol. 13, N0. 1, 2005
13. “Rule Based Ergonomics” Ergonomics in Design Vol. 12, No. 4, 2004
14. “Hotter than Houston: Body Temperature Control” Ergonomics in Design, Volume 12, No.3, 2004
15. (with Schlegel, R) “Expectancy and Compatibility” Ergonomics in Design, Volume 12, No. 2, 2004
16. “Newtonian Moments” Ergonomics in Design, Volume 12, No. 1, 2004
17. “Pay Attention”, Ergonomics in Design, Volume 11, No. 4, 2003
18. “Stand (Sit) up Straight: The Functional Anatomy of Posture”, Ergonomics in Design Volume 11, No 2, 2003
19. “What Kind of Shape are You In: Anthropometry and Appearances”, Ergonomics in Design, Volume 11, No. 1, 2003
20. “Bias in Human Judgment: Is Your Halo Slipping?” Ergonomics in Design, Vol. 10, No 4, 2002
21. "JNDs, SDs, HSDs, and DNDs: The Weber-Fechner Law", Ergonomics in Design, Volume 10, No 3, 2002
22. "Wrong Number: They Didn't Listen to Miller", Ergonomics in Design, Vol. 10, No.2, 2002
23. "Murphy's Law: If it Can Happen it Will", Ergonomics in Design, Vol. 10, No. 1, 2002
24. "Gas Happens: The Gas Laws", Ergonomics in Design, Vol.9. No. 4, 2001
25. “My Arms are Getting Tired: Rohmert’s Law”, Ergonomics in Design, Vol. 9, No.3, 2001
26. “The More I Practice the Better I Get: de Jong’s Law”, Ergonomics in Design Vol. 9, No. 2, 2001
27. "Tight Targets Take Time: Fitts Law” Ergonomics in Design, Vol. 9, No. 1, 2001

**Refereed Conference Papers**

1. Incorporating Kano’s model and Markov chain into Kansei Engineering in services,  (with Hartono M and K. C Tan) to be published in proceedings of the 1st International Conference on Human Side of Service Engineering on 21-25 July 2012, San Francisco, California, USA.
2. Cultural differences on Kansei Engineering applied to services, to be published in proceedings of the 2nd (with M Hartono and K C Tan) **Southeast Asian Network of Ergonomics Societies (SEANES)** conference on 9-12 July 2012, Langkawi, Malaysia.
3. Transportation for all Ages, Keynote Address **Southeast Asian Network of Ergonomics Societies (SEANES)** conference on 9-12 July 2012, Langkawi, Malaysia., Keynote Address
4. The Analysis of BMI as a measure of body shape and composition in Asian Populations. (With Liu Shuli, and Tan Kay Chuan,) **Southeast Asian Network of Ergonomics Societies (SEANES)** conference on 9-12 July 2012, Langkawi, Malaysia.
5. Decision making in Common Basketball Scenarios, (with Ng Yuwen, Stella and Tan Kay Chuan), ESE 2012, Macau, Singapore Management and Sports Science Institute, Singapore
6. Drillis and Contini Revisited, (with Tong Xin, Chui Yoon Ping, Low Wai Ping, Tan Kay Chuan, Markus Hartono, Manoharan Aravindakshanand Fabian Ding. Accepted at IHFE, San Francisco 2012
7. (Not So) Perfect Ageing, (with Ng Yuwen and Tan Kay Chuan) Accepted at IHFE, san Francisco 2012
8. A Fuzzy Model of Knowledge Awareness (with Chai Kah Hin), Accepted at IEEE Systems Conference Bali, 2012)
9. “Simulation of Emergency Evacuation from Transport Category Aircraft” (with E Savage and W Waldock) SCSI Conference, Torrance, CA, February 2009.
10. “Analysis of a North American Monsoonal Surge Event and its relation to Hazardous Aviation Weather” (with Ivanova, Lackey, James and Sinclair) SAWSII FAA Aviation Weather Workshop, October 2008
11. Computer Simulation of Emergency Egress from Transport Category Aircraft” (with E. Savage and W. Waldock) UAA Research Conference, Denver, October 2008
12. “Ergonomics and Autism” (with G Peacock) Annual Human Factors and Ergonomics International Conference, Las Vegas, July 2008
13. “ADS-B and Flight Safety” (with G Northam) FAA / CGAR conference Anchorage, June 2008
14. “System Safety in Aviation” National Safety Council / ARTEX Conference, Prescott, February 2008
15. “The Grammar of Design,” International Design Conference, Miami, January, 2008
16. System Safety and Unmanned Aerial Vehicles (with Northam), Conference on Safety across High Consequence Industries, St Louis University, March 2007
17. “Safety Issues in Pre Flight Inspection,” (with N Lawrence) Conference on Safety in High Consequence Industries, St Louis
18. “The Case for an Aviation Weather Decision Aid,” (with J. Smith)FAA, Southwest Aviation Weather Conference, Phoenix (2007)
19. “The Semantics of Human System Design,” SAE International Conference on Environmental Systems, Denver, 2004
20. “Human Factors and Systems Engineering” Applied Ergonomics Conference, IIE, Orlando, Florida
21. “Time- The Ultimate Ergonomics Challenge” (with Kimbler and Bishu) Institute of Industrial Engineering Annual Conference (2004)
22. “Human Factors and Systems Engineering” Applied Ergonomics Conference, IIE, Orlando, Florida (2004)
23. “Habitability Measurement and Concept Mapping” (with A Schaffer and D Zelik) Habitation 2004, Orlando, Florida (2004)
24. A Discounting Model for Task Design, Applied Ergonomics Conference, IIE, Orlando, Florida, 2004
25. (with S Rajulu and J Maida) “EVA Performance Prediction” AIAA Conference, San Diego (2004)
26. "Boats, Trains, Cars and Space Vehicles: Human Factors and Systems Engineering", Plenary address and workshop at New Zealand Ergonomics Society Annual Conference, Wellington (2002)
27. "International Space Station Robotic Systems Operation: A Human Factors Perspective" (with N. Currie), HFES Annual Conference, Baltimore (2002)
28. "An Index of Habitability" (with J. Blume and S. Vallance) International Conference on Environmental Systems, Society of Automotive Engineers, San Antonio, (2002)
29. “A Checklist for Industrial Ergonomics Checklists,” with G Orr, IIE, IVth IIE Annual Applied Ergonomics Conference, Orlando (2001)
30. “Return to work – moving from Physiotherapy to Ergonomics,”
    * 1. IEA / HFES Conference, San Diego (2000)
31. “EDAN – Ergonomics Decision Analysis” IIE 2nd Annual Applied Ergonomics Conference, Houston (1999)
32. “Anthropomorphic Modeling in Practice” with Heather Reed, IIE 2nd Annual Applied Ergonomics Conference, Houston (1999)
33. “Intelligent Assists – A New Generation of Ergonomics Tools” with Prasad Akella, IIE 2nd Annual Applied Ergonomics Conference, Houston (1999)
34. “The Ergonomics of Computer Drafting Workstations” With Robert Fox, IIE 2nd Annual Applied Ergonomics Conference, Houston (1999)
35. “The Frequency Factor in Manual Materials Handling” with Heather Reed and Ed Mohr, IIE 2nd Annual Applied Ergonomics Conference, Houston (1999)
36. “Intelligent Assist Devices” with Prasad Akella, Robotics Association Conference, Detroit (1999)
37. "Ergonomics in Small Lot Delivery Systems" (with R Fox), Konz/ Purswell Symposium, Texas Tech University (1995)
38. "Future Challenges in Automobile Ergonomics", International Body Engineering Conference, Detroit (1993)
39. "Future Challenges in Automobile Manufacturing Ergonomics", International Body Engineering Conference, Detroit (1993)
40. "An Index of Hilliness: No Records Set at Boston" (with M.A. Ritter and D. Horvath) American Statistical Association Annual Conference, San Francisco (1993)
41. "A Computer Assisted System for Physical Ergonomics Analysis", (with J. G. Chen and R. E. Schlegel) Computers in Industrial Engineering (1991)
42. "Tax Complexity: An Approach to Easier Form Design" (with B. Theisen and E. Peacock) National Conference of the American Accounting Association, Nashville
43. "Human Factors in the Automobile of the Near Future" (with W. Wierwille) Human Factors Society Bulletin Volume 32. Number 11(1989)
44. "An Overview of the Ergonomics Approach to Automobile Seat Design" (with A. Koby) Conference on Bio-compatible Seating, Michigan State University, East Lansing (1988)
45. "A Database Management System for Ergonomics Information Analysis," (with J. G. Chen and R. E. Schlegel) Trends in Ergonomics/Human Factors V, Elsevier (1988)
46. "Visual Assessment vs Statistical Goodness of Fit for Identifying Parent Population," (with M. Berry, B. Foote and L. Leemis)Human Factors Society Annual Conference, Los Angeles (1988)
47. "Human Factors Challenges in Automobile Design", Invited Panel Presentation at Human Factors Society Annual Conference, Los Angeles (1988)
48. "An Ergonomics Evaluation of Hand Tool Use in Automobile Assembly" (with R. Schlegel and R. Wilcoxon) Human Factors Society Annual Conference, Los Angeles (1988)
49. "Human Factors Concerns in the Driver / Vehicle / as the Year 2000 Approaches”, (with W. Wierwille) FISITA International Conference, Detroit (1988)
50. “Computers in Cars" Conference on Human - Computer Interaction, (with A. Graesser) Hawaii (1987)
51. "Prototype Expert System for Physical Work Stress Analysis" (with J. G. Chen and R. E. Schlegel) Trends in Ergonomics/Human Factors IV (1987)
52. "EVA Suit Glove Design." (with F. Striz, R. Shambaugh and J. Hordinsky) Space Tech '85 Conference, Anaheim, California (1985)
53. "Structured Grading Software." (with Bryan D. Stewart) Human Factors Society Annual Conference, Baltimore (1985)
54. "Polar Coordinate Process Control Displays." (with R. E. Schlegel and T. Brace) International Ergonomics Society Conference, Bournemouth, England (1985)
55. "An Interactive Biomechanical Lifting Model," (with Chen Jen-Gwo) Mid Central Human Factors/Ergonomics Conference, West Lafayette, Indiana (1985)
56. "Sports Fixture Scheduling on a Microcomputer." (with Bryan D. Stewart) 7th Annual Conference on Computers in Industrial Engineering, Orlando, Florida (1985)
57. "Ergonomics" (with N. Parsi and R. E. Schlegel) GM Assembly Division, Central Office, Industrial Engineering Department (1983)
58. "Dynamic Drilling Displays," (with R. Schlegel and R. Dorman) presented to the Annual Human Factors Society Conference (1983)
59. "Critical Flicker Fusion and Grammatical Reasoning in the Evaluation of Shift Schedules." (with R. E. Schlegel) Proceedings of the International Ergonomics Association Conference, Tokyo (1982)
60. "The Feedback Classroom," Proceedings of the Annual Conference of the American Society for Engineering Education, Texas A&M University (1982)
61. "A Method for the Investigation of Short Term Memory": Proceedings of the International Symposium on Visual Information Processing and Control of Motor Activity, Sophia (1969)
62. "The use of Visual and Kinesthetic Information in Learning a Motor Skill": Research Project Report, Department of Ergonomics and Cybernetics, Loughborough University (1967)

**Technical Reports (mostly proprietary)**

1. The Design of an Ergonomics Program, MOM / WSHI, Singapore, 2011
2. Ergonomics for the Ageing Workforce, MOM / WHSI, Singapore, 2011
3. Evaluation of Synthetic Vision Systems for Controlled Flight into Terrain prevention – Honeywell (2006)
4. Human Factors Interface Issues in Unmanned Aerial System Design – NASA (2006)
5. Internal (NASA) reports on Human Factors in Space Operations (2000-2004)
   1. Space Human Factors Implementation Plan
   2. Science management
   3. First do no Harm – Facilitator Design
   4. Fatigue modeling
   5. Time management and crew scheduling
   6. Habitability measurement
   7. Human Factors Engineering integration
   8. Human reliability
   9. Human Factors Engineering training
   10. Plans for NSBRI role in Space Human Factors Engineering
   11. Graduate programs and student design competitions in space human factors engineering
6. An Alternative Ergonomics Standard, OSHA (1995)
7. Internal General Motors Reports (1986 – 2000)
   1. The Evaluation of Ergonomics Analysis Tools
   2. Requirements for Anthropomorphic Models
   3. Ergonomics Assessment of 3 Crew 2 Shift System
   4. Medical Management of Cumulative Trauma Disorders
   5. Ergonomics and Quality
   6. Walking in Manufacturing Operations
   7. Overhead Work
   8. Vertical Height issues in Manufacturing Operations
   9. The Requirements for Anthropomorphic Models
   10. Measurement in Manufacturing Ergonomics
   11. The Design of Ergonomics Investigations
   12. The Need for Physiological Recovery
   13. Target Size in Automobile Manufacturing and Assembly
   14. Energy Expenditure in Manufacturing Operations
   15. Ergonomics and Productivity
   16. Human Reliability
   17. The Economics of Ergonomics
   18. Human Force Capabilities and Limitations
   19. An Ergonomics Stress Strain Model
   20. Ergonomics for Executives and Engineers
   21. Postural Support Devices
   22. Statistical Methods
   23. The Access Car
   24. Unwanted Acceleration
   25. Human Factors Information Systems
   26. Vehicle Evaluation Process
   27. Automobile Seating
   28. Head Up Displays
   29. Controls and Displays Design
8. Evaluation & Recommendations Regarding Plant Ergonomics Program, General Motors Corporation - Oklahoma City Plant (1985)
9. Work Place Design and Information Flow, Oklahoma Disability Determination Services (1985)
10. EVA Suit Glove Design, NASA/ASEE, Student design competition (1985)
11. Analysis and redesign of DHS medical claims payments services, Department of Human Services, State of Oklahoma (1984)
12. Ergonomics Evaluation of Manual Materials Handling, Oklahoma Publishing Company (1984)
13. Ergonomics in Automobile Assembly, General Motors Corporation (1983)
14. Display and Code Design in a Liquefaction Plant, Energy Analysts, Inc. (1983)
15. Display Design for Drilling Instrumentation, TOTCO (1982)
16. Human Error in LNG Transport from Arctic Canada, Energy Analysts Inc. (1982)
17. Shift System Evaluation, Dartmouth (Nova Scotia) Police Department (1981)
18. Noise Induced Hearing Loss in Hong Kong Occupational Groups, Hong Kong University (1977)
19. (with Y. Nihei) "Technology, Employment Practices and Workers": Center for Asian Studies, University of Hong Kong (1979)
20. Transport for the Disabled, Hong Kong Social Services Department (1978)
21. Computer Aided Promotion System Design, Royal Hong Kong Police Force (1978)
22. Ergonomics Aspects of Mass Transit Railway Design, Hong Kong Mass Transit Authority (1978)
23. Health Trends & Their Impact on Telecommunications Services 1980 - 2000 AD, Department of Health and Security and the Post Office, England (1974)
24. Computer Analysis System for the R.C.G.P. Data Collection Sheet, Royal College of General Practitioners (1974)
25. Statistics and Data Processing Methods in Medicine, Royal College of General Practitioners (1974)
26. The Activities of General Practice Staff, Office of Health Economics, England (1973)
27. Information Retention in Manual Control, Science Research Council (1972)
28. Format Errors in the Use of Fast Random Enquiry Devices (Computers), West Midlands Gas Board, England (1972)

**Human Factors and Ergonomics Society Administrative Activities**

2005 – 2008 Member, HFES Executive Council

2004 – 2008 Chair HFES A. R. Lauer Award Committee

2003 – 2005 Member US / HFES review committee for ISO HF standards

2000 - 2003 Member, HFES Executive Council, HFES Standards Sub council

1999 – 2000 Member USTAG to ISO TC 159/SC3, Anthropometry and Biomechanics

1995 - Present Associate Editor, Ergonomics in Design Journal

1994 - 1995 Chairman, Industrial Ergonomics Technical Group

1983 - Present Reviewer, National and International Ergonomics / Human Factors Journal and Conference Submissions

1992 - 1995 Program Chairman SE Michigan Chapter of Human Factors and Ergonomics Society

1988 - 1989 Chairman, Industrial Ergonomics Technical Group

1986 - 1987 Convener and Program Chair, Sport and Recreation Interest Group

**Other Administrative Activities**

2010 – 2012 Board of Directors and Chair of Compensation Committee, Jinhao Motors Ltd

2005 – Present Board of Directors and Chair of Compensation Committee UNILAVA Ltd

2005 - 2008 ABET, Engineering Program Evaluator

2003 - Present Associate Editor, Habitation Journal

2003 – 2004 Member AIAA Life Sciences Committee

2002 Coordinator, NASA Space Human Factors Workshop, Houston

2001 - 2004 Coordinator, NASA Space Human Factors Science and Technology Working Group

1999 – 2000 External member of NASA Space Human Factors Working Group – an external organization set up to advise NASA on Human Factors research issues related to extended space explorations.

1999 – 2004 Reviewer, NASA grant submissions on Space Human Factors

1999 – 2000 Executive Vice President IIE South East Michigan Chapter

1999 – 2000 Member USTAG to ISO TC 159/SC3, Anthropometry and Biomechanics

1998 – 2000 Vice President, Board of Certification in Professional Ergonomics

1997 - 1998 Director, Board of Certification in Professional Ergonomics

1997 - 2001 Member, National Occupational Research Agenda (NORA) Committee on work related musculoskeletal disorders

1996 - 1998 Chairman, AAMA Ergonomics Committee

1994 - 1998 Organizing committee, AAMA / COT Annual Conference on Managing Ergonomics in the 90s

1994 - Present Examiner, Board of Certification in Professional Ergonomics

1994 – 1998 Editorial Board, Workplace Ergonomics Journal

1992 - Present Reviewer, National and International Ergonomics / Human Factors Journal and Conference Submissions

1991 - 1999 Ergonomics Committee, American Automobile Manufacturers Association

1990 - 1996 Chairman, Manufacturing Ergonomics Technical Committee General Motors Corporation

1991 - 1992 Director, Ergonomics Division, Institute of Industrial Engineers

1990 - 2000 Member, Human Factors Committee, National Research Council

1986 - 1991 Member, Controls & Displays Committee, Society of Automotive Engineers

1987 - 1991 Supervisor, University Research Projects on Automobile Design

General Motors Corporation

1987 - 1991 Committee on Ergonomics Requirements for Automobile Manufacturing.

General Motors Corporation

1987 - 1989 Chairman, Corporate Controls & Displays Technical Committee

General Motors Corporation

1987 - 1989 Member, Corporate Human Factors Steering Committee

General Motors Corporation

1988 Human Factors Coordinator

FISITA/SAE

1985 - 1986 Faculty Appeals Committee, University of Oklahoma

1985 - 1986 Faculty Senate, University of Oklahoma

1985 - 1986 "Mathcounts" Coordinator, OSPE Canadian Valley Chapter

1984 - 1986 Committee on Promotion and Tenure, School of Industrial Engineering, University of Oklahoma

1983 - Present Technical reviewer for ergonomics and human factors journals and conference submissions

1983 - 1984 Vice President for Education, Chapter 57 American Institute of Industrial Engineers

1983 - 1985 Annual Symposium Coordinator, School of Industrial Engineering, University of Oklahoma

1983 - 1985 Computer Planning Committee, College of Engineering, University of Oklahoma

1979 - 1981 Graduate Program Coordinator, School of Physical Therapy, Dalhousie University

1980 - 1981 Tenure and Promotion Committee, Faculty of Health Professions, Dalhousie University

1977 - 1978 Captain of Cricket, University of Hong Kong

1976 - 1977 Executive Committee, Hong Kong Cricket Association

1977 - 1978 Chairman, Royal Society of Health, Hong Kong

1976 - 1978 Use of English Committee, University of Hong Kong

1974 - 1978 Graduate Committee, School of Industrial Engineering, University of Hong Kong

1970 - 1974 Convener, Midlands Area Ergonomics Meetings, University of Birmingham

1971 - 1973 Research Staff Representative on Faculty Council, Faculty of Science & Engineering, University of Birmingham

1964 - 1968 Executive Committee, Royce Hall, Loughborough University

1966 Captain of Cricket, Loughborough University

1966 - 1967 Chairman, Athletic Union, Loughborough University

**Other Appointments and Extended Consultancy**

2006 Judge, International Competition in the Human Factors Aspects of Vehicle Design, IASCD, Giugiaro / Italdesign, Torino, Italy

1985 Ergonomics Consultant - Manufacturing ergonomics

General Motors, Oklahoma City Plant

1983 - 1986 Industrial Engineering Consultant - Office ergonomics

Oklahoma Department of Human Services

1982 Ergonomics Consultant - Equipment design

TOTCO - Oil well Drilling Equipment Manufacturer

1980 Ergonomics Consultant - Shift system design

Dartmouth Police Department, Nova Scotia

1976 - 1978 Industrial Engineering Consultant - Promotion systems

Royal Hong Kong Police Services

1976 - 1978 Ergonomics Consultant - Passenger, driver, control room and environmental systems design

Hong Kong Mass Transit Authority

1972 - 1974 Statistics and Data Processing Advisor

Royal College of General Practitioners, UK

**Expert Witness Activities**

1. Portable Soccer Goals (2009)
2. Health and Fitness Center Design – Training and Warnings (2005)
3. Retail Store Design – Shelving (2005)
4. Warnings on Consumer Products - Air Horns (2005)
5. Gear shifter design – Mechanical linkage and status display (1999)
6. Seat belt warnings – Passenger seat recline (1998)
7. Inadvertent Release of Seat Belts – Seat belt release mechanism (1986)
8. Retail Store Design – Steps (1985)
9. ATV Safety – Vehicle design, training, warnings (1985)
10. Hand tool design – Vibration (1986)
11. Crib safety – Anthropometry, warnings (1985)
12. Vehicle Tire Changing – Warnings (1985)
13. Biomechanics of Neck Exercise Equipment – Equipment design, training, warnings (1985)
14. Mobile Crane Hoist Control Mechanisms – Pedal design (1985)
15. Powered Garden Tool – Guarding, Warnings (1984)
16. Carpal Tunnel Syndrome – Data entry workplace and job design (1984)
17. Biomechanical Strength Testing – Fitness for work (1983)

### **Recreation**

1978 - Present Running - Regular participation in local road races

78 Marathons (17 at Boston)

National Senior Olympics

1950 - 1994 Soccer - University and Club Teams

Player, Coach, Referee, Administrator

1958 - 1978 Cricket - University and Club Teams

1958 - 1964 Rugby - University and Club Teams

1958 – Present Golf

1996 – 2004 Bee keeping

1996 – 2004 Vintage car maintenance

1990 – Present Short story writing

2003 - Present SCUBA

2006 – 2009 Flying

**Family**

Wife Eileen Peacock PhD, CPA, CMA, Senior Vice President and Chief Officer (Asia - Pacific), AACSB International (Retired)

Daughter Georgina Peacock Goebel MD, MPH, Developmental Disorders Director, Centers for Disease Control, Atlanta

Daughter Elizabeth Peacock MD PhD, Polar Bear Biologist, Emergency Medicine Physician

Daughter Rev Caroline Peacock MS, Chaplin, Emory Hospital, Atlanta

Son Thomas Peacock, Musician, Los Angeles