

VOLKER HUGO HARTKOPF, Ph.D.

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Director, Center for Building Performance and Diagnostics
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INTERNATIONAL INITIATIVES:
FUNDED RESEARCH AND PROFESSIONAL CONSULTING,
BUILDING SYSTEMS INTEGRATION, ADVANCED TECHNOLOGY,
BUILDING PERFORMANCE, ENERGY CONSERVATION,
URBAN REVITALIZATION, THIRD-WORLD HOUSING AND DISASTER PREVENTION

Education:

Abitur, Mörike Gymnasium, Ludwigsburg, Germany, 1960. Studies in Engineering, University of Toledo, OH, 1960/61; Vordiplom in Architecture, University of Stuttgart, 1964. Construction Worker, Germany, 1964-66. Dipl. Ing., Architect, University of Stuttgart, 1969. Fulbright Scholar, 1970-72. M. Arch., University of Texas, Austin, TX, 1972. Dr. Ing., (Ph.D.), University of Stuttgart, Germany, 1989.

Experience:

Since the Fall of 1972, Dr. Hartkopf has taught and conducted research at Carnegie Mellon University. In 1975 he co-initiated and subsequently directed, until 1981, the first multi-disciplinary program in Architecture, Engineering and Planning in the United States of America with grants from the National Science Foundation and the building industry. In 1981 he founded the Center for Building Performance and Diagnostics at the University. Between 1981-1985 Prof. Hartkopf was on partial leave from Carnegie Mellon University and developed, jointly with Vivian Loftness and Peter A.D. Mill, the Total Building Performance Evaluation Method at Public Works Canada on Executive Interchange.

Based on the research and development needs identified in this method, Dr. Hartkopf has created a consortium of leading building industries (material, component, and systems manufacturers) and six U.S. Government Agencies, which he directs. In operation since 1988, the Advanced Building Systems Integration Consortium (ABSIC)¹ has completed international studies on the impact of advanced technology in office buildings in Japan, the United Kingdom, Germany, North America and France. ABSIC has chosen a twelve-year research and demonstration effort on the impact of advanced technology upon the physical, environmental, and social settings in office buildings, towards creating high performance work environments.

¹ *Present industrial membership:* Armstrong World Industries, BP Solar, BRICSNET FM, Electricité de France, LTG Aktiengesellschaft, Steelcase Inc., Thyssen Krupp AG, and United Technologies Inc.. *Present government membership:* The National Science Foundation Industry/University Cooperative Research Centers Program, the U.S. Department of Defense, the U.S. Department of Energy, the U.S. Environmental Protection Agency, the U.S. General Services Administration, the Dutch Government Building Agency, and Public Works and Government Services Canada. *Present university membership:* Carnegie Mellon University.

The consortium, in cooperation with Carnegie Mellon has designed, constructed and maintained the *Robert L. Preger Intelligent Workplace*[™], officially opened in the winter of 1997.

Professor Hartkopf was instrumental in creating a joint initiative between Carnegie Mellon University and the Daimler-Benz Corporation (now Daimler/Chrysler). The resulting Global Field Support Consortium (GFS) consisted of seven Global Hardware, Software and Service Providers² dedicated to creating the marketing and service environment of a Global 50 Corporation. At Carnegie Mellon this work was conducted by a team of six research institutes, including the Center for Building Performance and Diagnostics.

As a service to the University, Professor Hartkopf has held numerous offices, including Chair of the Faculty Senate 1989-90 during the year of transition from President Cyert to President Mehrabian; Member, Committee to Evaluate the President 1986-87; Member, Presidential Search Committee 1989-90; Member, University Tenure Committee; Chair, Departmental and College Tenure and Promotion Committees; Member, Educational Facilities Committee 1987-90.

As an architect, Professor Hartkopf realized building projects in Germany, France, Bangladesh, Peru, Korea, China, and the United States. He led master planning efforts for Volkswagen A.G. and the City of Wolfsburg, Germany; EXPO 2000 Hanover; and Berlin Lichtenberg, Germany.

Teamwork under his leadership has received the Solar Age Magazine Award, Second Prize, 1983; Progressive Architecture Research Award, 1986; Honorable Mention from the fifth annual American Institute of Architects (AIA) Educational Honors jury; the Teaching Award for the course sequence, "Design for Building Performance: An Integrative Approach," 1992; the AIA Pittsburgh Chapter Honor Award, 1998; the AIA National Honor Award, 1999; the Business Week/Architectural Record Awards, 1999. In 2007, Professor Hartkopf was elected Chairman of the first United Nation's Environmental Programme (UNEP) Sustainable Buildings & Construction Initiative's (SBCI) Think Tank in Washington, DC.

Professor Hartkopf has been frequently cited in the professional literature. A frequent keynote speaker in Europe, Asia and the Americas, he has authored over 100 technical publications: books, journal articles, reports, and conference proceedings.

CONFERENCE ORGANIZATION - EXECUTION

Prof. Volker Hartkopf was co-organizer of the U.S.-Chinese Energy and Environmental Design Workshop, hosted by the Center for Building Performance and Diagnostics, at Carnegie Mellon University, on December 8-11, 1999. Sponsors also included the NRDC and U.S. DOE for the U.S. and Agenda 21, the Ministry of Science and Technology, and the Ministry of Construction for China.

Chairmen: Volker Hartkopf and Jane Siegel for The Second International Workshop, CoBuild'99 on Cooperative Buildings: Integrating Information, Organizations and Architecture, that was held at Carnegie Mellon University, on October 1 and 2, 1999. The program was chaired by Dr. Dr. Norbert Streitz, GMD, Darmstadt, Germany.

Member Organizational Committee Second International Intelligent Building Conference; IB/IC Intelligent Building Congress, Tel Aviv, Israel, February 1995.

² *Membership:* DaimlerChrysler, Deutsche Telekom, IBM, PictureTel, Robert Bosch Corp., Siemens, Silicon Graphics, and Sun Microsystems.

Member of Program Committee, Workshop Chair, Remaking Cities Conference, Pittsburgh, Pennsylvania, March 1988 (Honorary Chair, Prince of Wales).

Topical Chairman (9 sessions) for Building Energy Conservation, Third International Conference on Energy-Use Management ICEUM III, Berlin, Germany, 1981.

Session Chairman: "Residential Design," Second International Conference on Energy-Use Management ICEUM II, Los Angeles, California, October 1979.

Co-Chairman Session: "Energy Design: Energy/Human Needs, and Environment," First International Conference on Energy-Use Management ICEUM I, October 1977; Tucson, Arizona.

FUNDED RESEARCH/DEVELOPMENT & DEMONSTRATION PROJECTS

Director (1988-Present), Advanced Building Systems Integration Consortium : development of an integrated research and development agenda for 20 corporations and two demonstration projects; conducting international studies in building performance, Japan, Germany, United Kingdom, and North America. A \$7.5 million R&D and a \$4.0 million demonstration effort over twelve years. \$10 million.

Mercedes Benz Marketing Academy, 1997, DM 31,500.

Mercedes-Benz Marketing Academy project: Telecommunication and Design, 1996, \$53,876.

Design recommendations for the renovation of Mercedes-Benz's building 21/Brühl and subsequent workshop held in Stuttgart on January 19, 1996, DM 13,500.00.

Initiated and Co-Directs (Ben Bennington, INI; Richard Martin, Robotics Inst.; Jane Siegel, HCII; Dan Siewiorek, EDRC; Scott Stevens, Informedia Project) the Model for Networking of Field Support and Maintenance Operations (AMERFS), a multi-year multi disciplinary collaborative electronic tool development founded by the Daimler-Benz AG, Stuttgart, Germany .

Principal Investigator of NSF Industry-University Cooperative Research Center (IUCRC), 1991-present, \$75,000/yr.

Co-Principal Investigator, Electric Power Research Institute (EPRI).

Co-Principal Investigator, Construction Engineering Research Laboratory (CERL) I & II.

Principal Investigator, Department of Energy (DOE).

State of Pennsylvania Energy Office Grant, "Incorporating Energy and Diagnostics," with V. Loftness, \$70,000.

Principal Investigator, Advanced Workstations and Building Systems Integration, International Review and Concept Development; Commonwealth of Pennsylvania, Building Industry, and Public Works Canada, 1987-88, \$183,000.

Principal Investigator, "Architecture for Art's Sake," Strengthening Architectural Criticism Towards Improving Building Performance –National Endowment for the Arts, Design Arts Grant, 1986-1987, \$80,000.

Principal Investigator, "Energy Performance Monitoring of the Manchester Project;" DOE Office of Buildings and Community Systems, Jean Boulin, 1981-1985, for monitoring of energy performance of new infill design with Brookhaven National Laboratories, \$100,000; Parallel contract with Dr. C. Davidson (Civil Engineering) "Air Quality Monitoring in the Manchester Project," National Science Foundation, Gifford Albright, 1982-1985, \$200,000.

Principal Investigator with R. Glance, "Energy Efficient Historic Revitalization in the Inner City," Department of Interior, National Historic Trust.

Project Director and Principal Investigator, "Inner-City Energy Efficient Revitalization – Case Study and Demonstration Project," DOE Office of Buildings and Community Systems, J. Millhone; including technical, social and economic feasibility alternatives, design guidelines, construction supervision, and occupancy guidelines for 27 completed energy-efficient new and rehabilitated dwellings, 1979 to 1982, \$750,000.

Principal Investigator with Dr. C. Goodspeed (Civil Engineering) and F. Cuny (INTERTECT), "Emergency Housing, Interdisciplinary Research into Materials, Construction and Design Processes for Large Scale Relief Housing in Disaster Prone Areas [flood and earthquake]," Department of State, Agency for International Development, J. Clapp, 1975-1982, \$425,000.

Principal Investigator with V. Loftness (Dubin-Bloome Associates), "Improving the Energy Performance of a Glass Box Office Building," DOE Solar Applications Branch, Michael Maybaum, 1979 to 1981, \$50,000.

Project Director and Principal Investigator, "Research Design and Demonstration of First (world wide) Inner-City Passive-Active Solar House in South Oakland, Pittsburgh," Pittsburgh Urban Redevelopment Authority design/construction 1977-1979, monitoring 1979-1981; \$40,000 construction grant.

Principal Investigator, "Curriculum Development and Establishment of Multi-disciplinary Master of Science Program in Architecture," National Science Foundation, Dr. A. Withrow; 1975-1979, \$450,000; with matching grants from Industry (Equitable, New York Life, Alcoa) totalling \$100,000.

Principal Investigator, "Ice as a Building Material for Responsive Environments," NSF Faculty Development Grant 1972-1973.

TEACHING AND EDUCATIONAL INNOVATION

Courses Taught:

Fall 2009 Ecological Footprints
Spring 2009 Performance of Advanced Building Systems
Spring 2009 Advanced Building Systems
Spring 2008 Performance of Advanced Building Systems
Spring 2008 Powering the Campus of the Future
Spring 2008 Advanced Building Systems
Spring 2007 Advanced Building Systems
Spring 2007 Studio
Fall 2006 Design of Integrated Systems
Spring 2006 Advanced Buildings
Fall 2005 Design of Integrated Systems
Spring 2005 Performance of Advanced Building Systems
Fall 2004 Design of Integrated Systems
Spring 2004 Advanced Buildings
Fall 2003: Design of Integrated Systems
Spring 2003: Performance of Advanced Building Systems
Fall 2002: Engineering and Sustainable Development (team-taught)
Spring 2002: Performance of Advanced Building Systems
Spring 2002: Advanced Buildings
Spring 2002: Studio

Fall 2001: Powering the Campus of the Future (team-taught)
Spring 2001: Performance of Advanced Building Systems
Fall 2000: Design of Integrated Systems
Spring 2000: Performance of Advanced Building Systems
Fall 99: Design of Integrated Systems
Summer 99: Advanced Building Systems and Performance
1998/99: Distance Learning with Technical University of Braunschweig
Fall 98: Design of Integrated Systems
Summer 98: The Performance of Advanced Building Systems
Summer 98: Building Systems Integration Tools
Fall 97: Design of Integrated Systems
Fall 96 Synthetics
Spring 96 Total Building Performance

Directed Research of exchange students from University of Dresden (1996)

Professor, tenured, Carnegie Mellon University, Department of Architecture, 1981-present; Chairman MS/PhD Programs 1983-1987; (Associate Professor without tenure 1976-1981; Assistant Professor 1972-1976). Offering courses in all programs in the department. Teaching in the first professional programs, B.Arch and M.Arch.: Design studio, lecture courses in Building Performance, Building Diagnostics, Third World Housing. Teaching in M.Sc./PhD Programs: MS/PhD Theory Course, Project Courses, Systems Courses (joint with School of Urban and Public Affairs), lecture courses in Building Performance and Building Diagnostics. Currently supervising nine PhD students.

Director and initiator (1975), with Heads of Architecture, Civil Engineering and Dean of Urban and Public Affairs, Advanced Building Studies Program, first North American multidisciplinary graduate program for architects, engineers, and planners.

Director and initiator (1983-present), Center for Building Performance and Diagnostics, Carnegie Mellon University.

Director and initiator (1975), with Department Heads, D. Highlands (Architecture) and Steven Fenves (Civil Engineering), and Dean W. Cooper and Charles Eastman of SUPA, Advanced Building Studies Program, a graduate interdisciplinary program developed with grants from the National Science Foundation, the Metropolitan Life Insurance Company, Equitable Life Insurance Company, Alcoa Foundation, Urban Development and Investment Corporation, and the Tri-state Savings and Loan Association.

Co-founder (1981) with Prof. C. Eastman, Institute of Building Sciences, interdisciplinary research programs for Master of Science and PhD students in architecture.

Assistant Professor, North Dakota State University, Dept. of Arch. 1971-1972.

Teaching Assistant, University of Texas at Austin, Dept. of Arch. 1971.

Instructor ("Lehrbeauftragter"), University of Stuttgart, School of Architecture 1969-1970.

PhD THESIS CHAIR

Fall 2008- Lieninger, Christopher; Talpes, Lucia; Yu, Yuebin

Spring 2008 – Betz, Frederik; Gu, Yang, Hu, Yang; Svirastava, Viraj; Yang, Xiaodi

Winter 2007—Qu, Ming

Summer 2006- Yin, Hongxi

Spring 2004 - Yoon, Heakyung

Winter 2003 - Boonyakiat, Jayada

Winter 2002 - Mahattanatawe, Prechaya

Summer 2002 - Mo, Zhengchun

Spring 2002 - Gurtekin, Beran, Mahattanatawe, Prechaya, Mertz (Bosko), Kristie

Spring 2001 - Eissa, Hesham, Ilal, Mustafa Emre ,

Spring, 1996 - Seongju Chang, Nyuk Hien Wong, Acha Chutarat, Vivi Chao (absentee status)

Fall, 1995 - Seongju Chang, Nyuk Hien Wong, Vivi Chao (absentee status)

Spring, 1994 - Khee Poh Lam

Spring, 1991 - Chris Kesner

Spring, 1991 - Mao-Lin Chiu

Fall, 1991 - Pierre Coté

PROFESSIONAL DESIGN

Principal, VLH Associates; 1982-present.

Partner, Harlyn Thompson Associates, Fargo North Dakota; 1971-1973.

Senior Designer, Siegel and Wonneberg, Architects, Stuttgart Germany; 1969-70, planning and design of factory complex for Bosch GMBH, completed.

Private Practice, Ludwigsburg 1964-66: Designed and constructed an apartment and office building (rehabilitation, renovation and new construction completed 1968, construction cost: DM 450,000).

OTHER POSITIONS

Resident, Executive Interchange Canada, Architecture and Building Science Directorate, Department of Public Works, Ottawa, 1982 to 1985; Research and Development of Total Building Performance Methodology for Building Design and Evaluation.

CONSULTANCIES

Consultant to Terradime, LLC, Concept Synthesis-Construction Trailers, September 2009-Present

Consultant to Capital Market Authority (CMA), Riyadh, Saudi Arabia, March 2009

Consultant to Smart Building Project at KSA, February 2009-Present

Consultant to Korea Advanced Institute for Science & Technology (KAIST), U-City Track Academic Program, December 2008

Consultant to Louis Berger Group, MASDAR Project, Chicago, IL, November 2008

Consultant to USAID Energy Conservation and Commercialization III Project (ECO III), International Advisory Board, New Delhi, India, February 2008-Present

EXPO 2000 Berlin, Lichtenberg invited urban design competition

Consultant to the city of Wolfsburg and the Volkswagen AG. Developed Urban Expertise (Städtebauliches Gutachten) a vision for Wolfsburg in the year 2000, January-May, 1992.

Consultant to Three-National Government Study of Energy-Efficient Housing — Alternatives for the Future (Germany, Austria, Switzerland) funded by German Ministry of Research BMFT, October 1986.

Consultant to National Academy of Sciences Advisory Board for the Built Environment, Committee on Building Diagnostics, 1982 to 1984.

Consultant, Ontario Architects Association, Canada, Lecture Series on Building Performance and Field Evaluation, 1985.

Consultant, United Nations Disaster Relief Office, Geneva; UNDRO project on post-disaster housing and pre-disaster planning, 1976.

Consultant, Basin Electric Power Cooperative, Bismarck, North Dakota; Comprehensive development plan; 1971.

Consultant partnership with Dr. Ing. Curt Siegel, Stuttgart, Germany, new train station, City of Ludwigsburg; study of air rights and construction, 1969.

Private practice, Ludwigsburg, Germany; 1965-1968, mixed-use design complex constructed.

FELLOWSHIPS, AWARDS, AND HONORARY POSITIONS

Chairs the United Nations Environmental Programme's Sustainable Building Construction Initiative's Think Tank, September 2007

The Robert L. Preger Intelligent Workplace, where the Center for Building Performance and Diagnostics is housed, received the Business Week/Architectural Record Award 1999 sponsored by the American Institute of Architects, October 1999.

The Center for Building Performance and Diagnostics received a Honor Award for Architecture and Design for the design of the Robert L. Preger Intelligent Workplace. This is the highest National Award Category by the American Institute of Architects, May 1999.

Center for Building Performance and Diagnostics awarded the 1996 Three Rivers Environmental Award in the Higher Education category. Sponsored by the Pennsylvania Environmental Council and the Duquesne Light Company.

Listed in Who's Who Worldwide, 1993.

Elected member, Club of Rome, United States section, 1992.

Honorable Mention, from the fifth annual American Institute of Architects (AIA) Educational Honors jury. Teaching Award for the course sequence: *Design for Building Performance: An Integrative Approach*, 1992, with V. Loftness, A. Mahdavi and S. Lee.

Member Board of Trustees, Institute of Light & Building, Technical University, Cologne, Germany 1991.

The Progressive Architecture Research Citation, January 1988.

The Progressive Architecture Research Award, January 1986.

National Science Foundation Scientific Mission to Romania, September 1985 Energy and Buildings, Earthquake Engineering.

Executive Exchange Canada, 1981-85.

The Passive Solar Design Competition Award (Second Place) Multifamily Category with UDA Architects, Carnegie Mellon University Institute of Building Sciences and The Manchester Citizens Corp, American Gas Association, and Solar Age Magazine, March 17, 1983.

White House Conference on Energy and Urban Redevelopment 1979, hosted by President Carter; invited contributor.

Prize of the Soviet Union for students work, with Dr. C. Goodspeed (Civil Engineering) for project on disaster relief housing design, in the International Competition for UNESCO, XII Congress of IUA, Madrid, Spain, 1975.

Fulbright Scholarship for International Studies, the University of Texas at Austin, graduate study in Architecture and Business Administration, 1970-1972.

Charles de Gaulle Scholarship for studies in France, 1964.

EDUCATION

University of Stuttgart, Dr. Ing. in Architecture; Ph.D. Thesis: "Entwicklung eines Rahmenkonzeptes für den Wohnungsbau in erdbebengefährdeten Gebieten der Dritten Welt," 1989.

University of Texas at Austin; Master of Architecture, minor in Business Administration, 1972.

University of Stuttgart, Germany; Diplom Ingenieur, 1969.

Technische Hochschule, Stuttgart, Germany; Vordiplom Architecture, 1964.

University of Toledo, Ohio; studies in Civil Engineering, 1960-61.

Mörrike Gymnasium, Ludwigsburg, Germany; ABITUR, 1960.

BOOKS

Hartkopf, Volker, et al. *Designing the Office of the Future: The Japanese Approach to Tomorrow's Workplace*. New York: John Wiley & Sons, 1993.

Streitz, Norbert A., J. Seigel, V. Hartkopf, and S. Konomi (Eds.). *Lecture Notes in Computer Science: Cooperative Buildings: Integrated Information, Organizations and Architecture*. Berlin, Germany: Springer, 1999.

BOOK CHAPTERS

Hartkopf, V., Loftness V., "Designing Smart Offices and Homes", Pages 111-115 in Perfect Power, Editors Robert Galvin, Kurt Yeager with Jay Stuller, McGraw Hill Publishers, Printed in the United States 2008

Hartkopf, V., "Startschuss für eine transatlantische Brücke", Pages 41-43 in *Politische Ökologie*¹⁰⁵, *Nachhaltiges Design Laboratorium für industrielle Neuanfänge*, Preise Unsere Einzelheft- und Abo-Preise finden Sie auf den letzten beiden Seiten des Heftes, Juni 2007

Hartkopf, V., Loftness, V., "Strategies for sustainable built environments", Section 3: Transforming Communities Pages 170-181 in *Connected Real Estate*, Editors O'Donnell, Kevin, Wagener, Wolfgang, Torworth Publishing, UK. 2007

Hartkopf, V., Loftness, V., Aziz, Azizan, The Robert L. Preger Intelligent Workplace and the Building as Power Plant/Invention Works at Carnegie Mellon University, Chapter 19, Pages 319-333, in *Creating The Productive Workplace* (second edition), Edited by Derek Clements-Croome, Published by Taylor & Francis 2006

Hartkopf, V., Archer, D.H., Loftness, V., *Building As Power Plant (BAPP)*, Pages 55-74 in *Smart & Sustainable Built Environments*, Editors J. Yang, P.S. Brandon, A.C. Sidwell, Blackwell Publishing 2005

Hartkopf, V., Loftness, V., Aziz, Azizan, Hua, Y., *Intelligent Buildings-Professional and Educational Implications of Innovations in Building and Construction* Pages 551-558 in *CIB-W78 Conference July 19-21, 2005*, invited presentation/paper, Editors Scherer, R.J., Katranuschkov, P., Schapke, S.-E., Published by: Institute for Construction Informatics, Technische Universität Dresden, Germany

Hartkopf, V., V. Loftness, P. Mill, and M. Siegel. "Architecture and Software for Interactive Learning about Total Building Performance: Experience Based or Occupancy Expert Systems from Occupants to Facilities Managers and Designers." Chapter 11 in *Evaluating and Predicting Design Performance*. Ed. Yehuda Kalay. New York: John Wiley & Sons, 1992.

Hartkopf, V. and V. Loftness. "The Effects of Building Design and Use on Air Quality." In *Occupational Medicine: Problem Buildings - Building Associated Illness and the Sick*

Building Syndrome. Eds. Hanes Cone, M.D. and Michael Hodgson, M.D. Philadelphia: Hanley & Bellfus, Inc., 1989.

Hartkopf, V. "Future Office Design and Intelligence." In *Survey of Urban Distribution.* Ed..Dr. Hosono. Tokyo, Japan, 1989.

Hartkopf, V., V. Loftness, and P. Mill. "A Critical Framework for Building Evaluation: Total Building Performance, Systems Integration, and Levels of Measurement and Assessment." Chapter 12 in *Building Evaluation.* Ed. Wolfgang F.E. Preiser. New York: Plenum Publishing Corp., 1989, pp. 149-166.

Mill, P., F. Dubin, V. Hartkopf and V. Loftness. "The Need: Intelligent Buildings for Building Intelligence." Chapter 2 in *Intelligent Buildings: Applications of IT and Building Automation to High Technology Construction Projects.* Ed. Brian Atkin. New York: John Wiley, 1988.

Hartkopf, V. "Evaluating the Quality of the Workplace," Chapter 15 in *The Ergonomic Payoff: Designing the Electronic Office.* Ed. Rani Lueder. New York: Nichols Publishing Co., 1986.

Hartkopf, V., V. Loftness, and P. Mill. "Building Performance Criteria." Chapter 5 in *The Building Systems Integration Handbook.* Ed. Richard Rush. New York: John Wiley & Associates, 1985.

PUBLICATIONS/MAJOR REPORTS (Selected)

Working in Olmstead's Shadow: Guidance for Developing a Scope of Services for the Update of the Master Plan for the U.S. Capitol and Grounds. National Research Council of the National Academies. Volker Hartkopf, Contributor. Washington, D.C.: The National Academies Press, 2003.

Hartkopf, V., J. Shankavaram, P. Mathew, V. Loftness, A. Aziz, and R. Watson. *Beijing Energy Efficiency and Renewable Energy Demonstration Building.* Report from the U.S.-Chinese Energy and Environmental Building Design Workshop held at Carnegie Mellon University. December 8-11, 1999.

Hartkopf, V. and G. Suter. *Mercedes-Benz AG: Neugestaltung Gebäude 1/Brühl Flächenermittlung und Kostenschätzung.* März 1997.

Hartkopf, V., G. Suter, Mitarbeit-M.E. Ilal. *Mercedes-Benz AG: Studie über die bauliche Entwicklung des Werkteils Brühl.* Oktober 1996.

Hartkopf, V., B. Brügge, J. Haake, V. Loftness, J. Posner, H.W. Roth, G. Suter, and G. Wiemken. *Neugestaltung Gebäude 1/Brühl: unter besonderer Berücksichtigung der architektonischen, haus-und kommunikationstechnischen Bedürfnisse.* September 1996.

Loftness, V., Hartkopf, V., P. Mathew, N. Nice, and J. Shankavaram. *Overview of Facility Management Business in the US – Prospects for Business Development.* Prepared for Equitable Resources. September 1996.

Loftness, V., J. Beckering, W. Miller, and A. Rubin. *Re-valuing Buildings.* Grand Rapids: Steelcase, Inc., 1996.

Loftness, V., V. Hartkopf, A. Mahdavi, S. Lee, J. Shankavaram, K.J. Tu, A. Aziz, and P. Mathew. *Flexible Grid - Flexible Density - Flexible Closure Officing: The Intelligent Workplace.* U.S.

- Army Construction Engineering Laboratories (USA CERL), Contract DACA 88-93-D-0004 - Phase 1, January 1995.
- Loftness, V., V. Hartkopf, G. Wiemken, A. Aziz, A. Mahdavi, S. Duckworth, and S. Lee, with NSF-sponsored J. Paul and S. Ciotti. *Masterplanning Sustainable Office/R&D Communities*. Produced under contract to US Army Corps of Engineers Research Laboratory (USA CERL), January 1995.
- Hartkopf, V., V. Loftness, S. Duckworth, S. Lee, P. Drake, J. Posner, and G. Rainer. *The Intelligent Workplace Retrofit Initiative: DOE Building Studies*. Produced under contract for the U.S. Department of Energy, December 1994.
- Hartkopf, V., V. Loftness, G. Wiemken, A. Aziz, and H. Tröscher. *Städtebauliches Gutachten Wolfsburg 2000*. Wolfsburg: Volkswagen AG, January 1992.
- Hartkopf, V. and ABSIC team. *Study of Advanced Technology and Intelligent Buildings in France.* 135-page executive report. Advanced Building Systems Integration Consortium document. 1991.
- Hartkopf, V. V. Loftness, P. Mill, and M. Siegel, *Architecture and Software for Interactive Learning about Total Building Performance*. Paper at the Evaluating and Predicting Design Performance Conference. Held in Buffalo, March 1990.
- Hartkopf, V. and ABSIC team. *Study of Advanced Technology and Intelligent Buildings in Britain*. 59-page executive report. Advanced Building Systems Integration Consortium document. 1990.
- Hartkopf, V. and ABSIC team. *Study of Advanced Technology and Intelligent Buildings in North America*. 179-page executive report. Advanced Building Systems Integration Consortium document. 1990.
- Hartkopf, V. and ABSIC team. *Study of Advanced Technology and Intelligent Buildings in Germany*. 88-page executive report. Advanced Building Systems Integration Consortium document. 1989.
- Hartkopf, V. and V. Loftness, *Architecture for Art's Sake; Field Evaluation of Museum Performance for Future Design*. 300 pp. National Endowment for the Arts, 1989.
- Hartkopf, V. *Entwicklung eines Rahmenkonzeptes für den Wohnungsbau in erdbebengefährdeten Gebieten der dritten Welt, Grundlagen für Bauentwicklung und Baudemonstrationen*. Fakultät der Universität Stuttgart, Institut für Innenraum-gestaltung und Entwerfen der Universität Stuttgart, 1989.
- Hartkopf, V. and ABSIC team. *Study of Advanced Technology and Intelligent Buildings in Japan*. 60-page executive report with 50-page appendix. Advanced Building Systems Integration Consortium document. 1988.
- Hartkopf, V. and V. Loftness. *Total Building Performance and The Field Evaluation of Buildings*. 200 pp. Final report to Architectural and Building Sciences Directorate, Public Works Canada, 1985.
- Hartkopf, V. Manchester Monitoring : *Winning the Energy Relay, from Politician to Consumer*. 200 pp. Final report to Brookhaven National Laboratories, DOE Office of Building and Community Systems, 1984-85.

Hartkopf, V. *The Politicians' Workbook for Energy Conserving Urban Revitalization*, 70 pp. and *The Homeowners Workbook for Energy Conserving Urban Living*, 70 pp. DOE Office of Buildings and Community Systems, 1982.

Hartkopf, V. *Indigenous Building Techniques of Peru and their Potential or Better Withstand Earthquakes*. 313 pp. Published in English 1981, US Agency for International Development and Ministry of Housing and Construction in Peru. Translated into Spanish, 1984.

Hartkopf, V. *The Energy Retrofit of a Glass Box*. Final report for the energy retrofit of Carnegie Mellon University's Warner Hall, 150 pp. DOE Passive Solar Division, 1981.

Hartkopf, V. *Inner-City Case Study and Demonstration Project*, with graduate students, including *Guidelines for Energy Conservation in New and Rehabilitated Buildings*, 342 pp., and *Effect of Occupancy Behavior on Energy Use in an Inner-City Neighborhood*, 102 pp. Marcela Gaskill, DOE Buildings and Community Systems, 1975-81.

Hartkopf, V. *Feasibility Test of an Approach and Prototype of Ultra Low Cost Housing*. 75 pp. U.S. Agency for International Development, 1975.

REFEREED JOURNAL ARTICLES

Hartkopf, V., V. Loftness, and P. Mill. "The Intelligent Office." *Progressive Architecture*. September, 1990: pp. 47-52.

Hartkopf, V., V. Loftness, and P. Mill. "The Concept of Total Building Performance and Building Diagnostics." ASTM Special Technical Publication *Building Performance: Function, Preservation, and Rehabilitation*. STP 901, presented October 1983, published May 1986.

Hartkopf, V. and V. Loftness. "Promoting Energy-Efficient Rehabilitation and New Infill Construction in Inner City." ASTM Special Technical Publication *Building Performance: Function, Preservation, and Rehabilitation*. STP 901, presented October 1983, published May 1986.

Hartkopf, V. and V. Loftness. "The Energy Program in the Built Environment is Interwoven with Today's Political, Social and Economic Problems." *Energy Conservation and Management*. Vol. 22 (Pergamon Press, 1982).

Hartkopf, V. and C. Goodspeed. "Space Enclosures for Emergencies in Developing Countries." *Disasters*. Vol. 3, no. 4 (Pergamon Press, 1979): pp. 443-445.

Hartkopf, V. "Ward Street House." *Architects: Advanced Building Studies with David Shaeffer & Associates*. In *Process Architecture*. No. 6 (Process Architecture Publishing Co. Ltd., Tokyo, Japan, January 10, 1978).

INVITED JOURNAL ARTICLES

Hartkopf, V., K. Menzel, and J. Corsten. "Demonstrieren, Erleben und Gestalten." *FM Grundlagen*. (October 27, 1997).

Hartkopf, Volker, Otto Reimet, und Thomas Brander, forschung + praxis. "Die Zukunft hat — schon längst — begonnen: Das Konzept des 'Intelligent Workplace.'" *DBZ - Deutsche Bauzeitschrift*. (Mit-Press, 5, Mai 1996): p. 159-166.

Hartkopf, V. and V. Loftness. "The Intelligent Office." *American Building Industries and Carnegie Mellon University Research the "Intelligent Office."* In *Progressive Architecture*. (September 1990)

Hartkopf, V. "Work on Wheels." *Workplace: The New Look*. In *The Wall Street Journal*, June 4, 1990.

Hartkopf, V. and Boulin, Jean. "New Image and Lower Energy Bills in Manchester Inner City Neighborhood." *Result No. 51*. Centre for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET), International Energy Agency (IEA), and Organization of Economic Cooperation and Development (OECD). 1989.

Hartkopf, V. "Nicht technische, sondern die sozialen Belange der Mitarbeiter müssen im Vordergrund stehen," *Intelligente Gebäude (14)/Der rein technische Ansatz der "smart buildings" wird heute in Frage gestellt*. Handelsblatt Nr. 86 (Düsseldorf, Germany, May 6, 1989).

Hartkopf, V. "Auch die Qualität der Arbeitsumwelt muß stimmen." *Intelligente Gebäude (13)/Die letzten 15 Jahre brachten eine vollkommene Kehrtwendung - Räume für ein bis maximal drei Angestellte haben sich als besser erwiesen*. Handelsblatt Nr. 83 (Düsseldorf, Germany, April 29, 1989).

Hartkopf, V. "TAMS-21Roboter und Himawari sind Symbole des fortschrittsgläubigen Japan," *Intelligente Gebäude (12)/Temperatur und Lüftung werden über Telefon gesteuert*. Handelsblatt Nr. 76 (Düsseldorf, Germany, April 22, 1989).

Hartkopf, V. "Ein regelrechter Wettlauf um den fortschrittlichsten Bau." *Intelligente Gebäude (11)/Das Bauen in Japan wird mehr als kollektive Aufgabe verstanden*. Handelsblatt Nr. 73 (Düsseldorf, Germany, April 15, 1989).

Hartkopf, V. "Japan führt als einziges Land national wie global orientierte Untersuchungen durch." *Intelligente Gebäude (10)/Die unterschiedliche Denkweise bei Bürogebäuden*. Handelsblatt Nr. 68 (Düsseldorf, Germany, April 8, 1989).

Hartkopf, V. "Carnegie Mellon University Professor, Volker Hartkopf Lectures: 'Disputed Systems and Personal Control.'" *NIPON Economic News*. (Tokyo, Japan, January 27, 1989.)

REFEREED CONFERENCE PAPERS-PRESENTED AND PUBLISHED

(selected)

Hartkopf, Volker "Building Enclosures for Sustainability". Presented at the Build For A Sustainable Future, Messestand Kawneer/Alcoa, Germany, BAU 2009, March 31 -April 2, 2008.

Hartkopf, Volker, Yiqun Pan, Gang Wu, and Rohini Brahme. "Evaluation of Energy Performance of a BCHP Building Using EnergyPlus." Paper presented at the 21st IIR International Congress of Refrigeration 2003, Washington, D.C., August 17-22, 2003.

Hartkopf, Volker and Rohini Brahme. "Building As Power Plant – BAPP." Paper presented at the Fourth International Conference on Cold Climate – Heating, Ventilating and Air-Conditioning, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, June 15-18, 2003.

- Hartkopf, Volker. "Building As Power Plant – BAPP." Paper presented at the 2003 Globalcon Energy/Facilities Management Conference & Expo, Boston, Massachusetts, April 2-3, 2003.
- Hartkopf, Volker H., David H. Archer, and Hongxi Yin. "A Fuel Cell Based Energy Supply System for a Multi Purpose Building. Shanghai International Building Energy Forum, Shanghai, P.R. China, March 12, 2003.
- Hartkopf, V., V. Loftness, S. Lee, D. Archer, A. Aziz, R. Brahme, M. Mondazzi, Y. Pan, N. Raje, G. Wu, and H. Yin. "Building As Power Plant." U.S. Green Building Council International Green Building Conference and Expo, Austin, Texas, November 13-15, 2002.
- Loftness, V. and V. Hartkopf. "Building Investment Decision Support (BIDS)." U.S. Green Building Council, International Green Building Conference and Expo, Austin, Texas, November 13-15, 2002.
- Hartkopf, V. and V. Loftness. "The Building As Power Plant and The Robert L. Preger Intelligent Workplace at Carnegie Mellon University – Arguments for The Economic and Technical Feasibility of High Performance Buildings: The Work of the Center for Building Performance and Diagnostics (CBPD) and the Advanced Building Systems Integration Consortium (ABSIC)." *IBS Journal*. Vol. 2, No. 3 (September 2002): pp. 34-41. Presented at The International Conference on Intelligent Building Systems, "IBS for Built Environment," Seoul, Korea, August 31-September 3, 2002.
- Hartkopf, V., V. Loftness and A. Aziz. "Towards a Global Concept of Collaborative Space." The Sixth European Concurrent Engineering Conference, Valencia, Spain, April 18-20, 2001.
- Menzel, K., V. Hartkopf and M. E. Ilal. "Collaborative Learning and Design in Architecture, Engineering and Construction." Paper presented at "Design of a Glass Chair" in Hanover, Portuguese Pavilion, September 22, 2000.
- Hartkopf, V., J. Shankavaram and V. Loftness. "Systems Integration for Performance, Moving from Depreciating Inflexibility Towards Long-Term High-Performance Assets." Presented at the Asia Pacific Structural Engineering & Construction Conference, "ASPEC 2000," Palace of the Golden Horses, Kuala Lumpur, Malaysia, September 13-15, 2000.
- Hartkopf, V., J. Shankavaram, and V. Loftness. "Physical and Spatial Requirements for Concurrent Engineering." Paper presented at the ECEC'2000, Seventh European Concurrent Engineering Conference, Leicester, UK., hosted by de Monfort University, April 17-19, 2000.
- Mathew, P., V. Hartkopf and A. Mahdavi. "Towards the Building as Power Plant: Computational Analysis of Building Energy Self-Sustenance." Proceedings of the Sixth International IBPSA Conference, "Building Simulation '99," in Kyoto, Japan. Vol. II (1999): pp. 707-714.
- Hartkopf, V., Shankavaram, J., Lee, S., and Loftness, V. "The Use of an Enabling Matrix to Capture Evolutionary Best Practices: The Case of the Robert L. Preger Intelligent Workplace at Carnegie Mellon University." FOD-Congress, Berlin, Germany, October 28-29, 1999.
- Loftness, V. V. Hartkopf, S. Lee, A. Mahdavi, P. Mathew, J. Shankavaram and A. Aziz. "Architectural Alternatives for IAQ and Energy Efficiency." ASHRAE IAQ '98 Conference, New Orleans, LA, October 24-27, 1998.
- Loftness, V., V. Hartkopf, S. Lee, A. Mahdavi, P. Mathew, J. Shankavaram and A. Aziz. "The Collaborative Building: Mediating between Climate and Interior Quality." Presented at the

Second International Workshop, "CoBuild'99," Pittsburgh, PA, USA, October 1-2, 1999. Published in *Lecture Notes in Computer Science*, No. 1670 (Springer-Verlag, Heidelberg, Germany): pp. 29-44, ISBN 3-540-66596-X.

Hartkopf, V., V. Loftness, A. Aziz, S. Lee. "The GSA Adaptable Workplace Laboratory." Paper presented at the Second International Workshop, "CoBuild'99," Pittsburgh, PA, USA, October 1-2, 1999. Published in *Lecture Notes in Computer Science*, No. 1670 (Springer-Verlag, Heidelberg Germany): pp. 12-28, ISBN 3-540-66596-X.

Loftness, V., V. Hartkopf, S. Lee, A. Mahdavi, P. Mathew, A. Aziz and J. Shankavaram. "Linking Sustainable Infrastructures to Buildings and Communities." ICIS Paper (Institute for Civil Infrastructure Systems), Conference on the Coordinated Renewal of Civil Infrastructure Systems for Sustainable Human Environments, New York, NY, April 21-22, 1999.

Hartkopf, V., V. Loftness, A. Mahdavi and J. Shankavaram. "Erneurbare (IM) Mobilien: The Intelligent Workplace." Paper presented at Planung des Kongress, "New Work - New Buildings," at ORGATEC '98, Cologne, Germany, October 26-27, 1998.

Hartkopf V., and V. Loftness. "Managing Project for the 21st Century — The Case of the Intelligent Workplace." Paper presented at the Third International Congress on Construction, "Construction 12," Singapore, May 21-22, 1998.

Hartkopf V., V. Loftness, A. Mahdavi, S. Lee and J. Shankavarm. "An Integrated Approach to Design and Engineering of Intelligent Buildings — The Intelligent Workplace at Carnegie Mellon University." Published in *Automation in Construction*. Vol. 6 (Elsevier Science B.V., 1997): pp. 401-415.

Loftness, V., V. Hartkopf, A. Aziz and S. Lee. "The GSA Adaptable Workplace." Presented for the General Service Administration, Public Building Service, Federal Supply Service, Federal Technology Service, NEOCON Conference, Los Angeles, California, March 12, 1998.

Hartkopf, V., and M. Hemphill. "The Intelligent Workplace: A Research Laboratory." Paper presented at the Conference on Design for Productivity and Well-being in London, October 29-31, 1997. (Paper to be published in January 1999, in E. & F. N. Spon's book entitled *Creating the Productive Workplace*.)

Hartkopf, V., H. W. Roth, J. Freihaut, V. Loftness, and P. Mathew. "Towards User-Centered and Sustainable Thermal Conditioning Strategies for Large Buildings." Paper presented at International Symposium, "Air Conditioning in High Rise Buildings '97" (ACHRB '97), Shanghai, P.R. China, September 9-12, 1997.

Menzel, K. V. Hartkopf, and S. Lee. "Working in a Global Context: A Multi-National, Cross-Disciplinary Teaching Effort." The Seventh International Conference on Computing in Civil and Building Engineering in Seoul, Korea, August 19-22, 1997.

Menzel, K., J. Garrett, Jr., V. Hartkopf, and S. Lee. "Technology Transfer in Architecture and Civil Engineering Using the Internet — A Multi-National Teaching Effort.," Presented at the Fourth Congress on Computing in Civil Engineering, American Society of Civil Engineers (ASCE) in Philadelphia, Pennsylvania, June 16-18, 1997.

Loftness, V., V. Hartkopf, A. Mahdavi, S. Lee, J. Beckering, P. Mathew, J. Shankavaram, and K. J. Tu,. "The Intelligent Workplace Retrofit: Investing in the Hidden Infrastructures for Workplace Flexibility and Performance." IB/IC Conference in Israel, March 1997.

- Menzel, K., S. Lee and V. Hartkopf. "Improving Knowledge About Sustainable, Energy-Efficient Housing Through Multi-National Teaching Efforts." Paper presented at the Fourteenth International Conference on Passive and Low Energy Architecture in Kushiro, Japan, January 8-10, 1997.
- Mahdavi, A., R. Ries, and V. Hartkopf. "Problems and Promise of Computational Methods for Architectural Eco-Analysis." The 1996 International Symposium of CIB W67, "Energy and Mass Flows in the Life Cycle of Buildings," in Vienna, Austria, 1996, pp. 459-466.
- Mahdavi, A. P. Mathew, V. Hartkopf, and V. Loftness. "Bi-directional Inference in Thermal Design." The Association for Computer Aided Design in Architecture (ACADIA) 1996 Conference in Tucson, Arizona on October 31-November 2, 1996, pp. 133-143.
- Hartkopf, V., V. Loftness, J. Shankavaram, and K. J. Tu. "Facilities Managers as Indispensable Partners in Corporate Strategic Planning." World Workplace '96 (IFMA) in Salt Lake City, Utah, October 6-8, 1996.
- Mahdavi, A., L. Guanghau, V. Hartkopf and M.E. Illal. "An Integrated Computational Room Acoustics Design System Part II: Implementation Approach and Preliminary Results." Noise-Con '96, Seattle, Washington, September/October 1996, pp. 797-802.
- Loftness, V., V. Hartkopf, A. Mahdavi, and J. Shankavaram. "Flexible Infrastructures for Environmental Quality, Productivity and Energy Effectiveness in the Office of the Future." The International Facility Management Association (IFMA), "Intellibuild '96," Anaheim, California, June 17-20, 1996.
- Mahdavi, A., V. Hartkopf, and P. Mathew. "The Potential for Improving the Energy Performance of HVAC, Lighting, and Enclosure Systems in Commercial Buildings." Tsinghua-HVAC-'95: International Symposium on Heating, Ventilation, and Air Conditioning, Tsinghua, 1995.
- Loftness, V., V. Hartkopf, J. Shankavaram, and A. Mahdavi. "User-Based Control Choices in Relation to Thermal Comfort, Air Quality and Energy Effectiveness." The Second International Conference on IAQ, "Ventilation and Energy Conservation in Buildings," Montreal, Quebec, Canada, 1995.
- Loftness, V., V. Hartkopf, A. Mahdavi, S. Lee, J. Shankavaram, and K. J. Tu. "The Relationship of Environmental Quality in Buildings to Productivity, Energy Effectiveness, Comfort, and Health - How Much Proof do we Need?" The International Facility Management Association (IFMA) World Workplace Conference in Miami Beach, Florida, September 17-20, 1995.
- Hartkopf, V. and V. Loftness. "Interior Environmental Control Systems for an Intelligent Building." ABSTRC Anniversary Conference at Yonsei University, Seoul, Korea, May 26, 1995.
- Hartkopf, V., and V. Loftness. "International Collaboration on the Intelligent Workplace." Pan Pacific Symposium at Nagoya University, Nagoya, Japan, March 1995.
- Hartkopf, H. V. Loftness, A. Mahdavi, and J. Shankavaram. "Hi Tech – Low Tech, Healthy, Intelligent Buildings." IB/IC Intelligent Building Congress Conference, in Haifa, Israel, February, 1995.
- Loftness, V., V. Hartkopf, A. Mahdavi and J. Shankavaram. "Guidelines for Masterplanning Sustainable Building Communities." The First International Conference on Sustainable Construction, Tampa, Florida, November, 1994.

- Mahdavi, A. P. Mathew, S. Kumar, V. Hartkopf, V. Loftness. "Effects of Lighting, Zoning, and Control Strategies on Energy Use in Commercial Buildings." The 1994 Illumination Engineering Society of North America (IESNA) Annual Conference in Miami, Florida, August 9-11, 1994.
- Loftness, V., V. Hartkopf, S. Lee, and A. Mahdavi. "Smart Buildings: Tomorrow's Intelligent Buildings will Merge Advanced Technologies and Environmental Responsiveness Through Team Design Processes and User-Based Facilities Management," The Second National Conference on Building Commissioning in St. Petersburg, Florida, May 10, 1994.
- Mahdavi, A., K. P. Lam, and V. Hartkopf. "META-4: A Model for the Hygro-thermal Evaluation of Building Enclosure Design." CLIMA 2000: Engineering the Built Environment, London, 1993.
- Mahdavi, A., V. Hartkopf, V. Loftness, and K. P. Lam. "Simulation-based Performance Evaluation as a Design Decision Support Strategy: Experiences with the 'Intelligent Workplace.'" The Third International Conference of the International Building Performance Simulation Association in Adelaide, Australia, 1993.
- Loftness, V., V. Hartkopf, A. Mahdavi, J. Shankavaram. "Air Movement in Relation to Thermal Comfort, Air Quality and Energy Effectiveness." NIOSH/ASHRAE 1993 Conference, Denver, Colorado, Winter 1993.
- Loftness, V., V. Hartkopf, A. Mahdavi, S. Lee, and J. Shankavaram. "Defining Fresh Air Architecture - International Approaches to Healthier Buildings," Solar '93 Conference, Washington D.C., April 1993.
- Hartkopf, V. V. Loftness, S. Lee, A. Mahdavi, and J. Gauchel. "Advanced Workplace Demonstration Project." Building Design, Technology & Occupant Well-Being in Temperate Climates, Brussels, Belgium, February 17-19, 1993.
- Hartkopf, V. V. Loftness, and A. Mahdavi. "The Enclosure of the Office of the Future." The Institute for Light and Building Technologies, "TUV Facades of the Future — Living with the Sun," Cologne, Germany, October 7-9, 1992.
- Loftness, V. and V. Hartkopf. "The Individual Workplace: Globalization, New Technologies and Organizational Changes" and "Comfort and Health in the Workplace." The Federal Workplace in the Year 2000. Ed. Arthur Rubin. NIST/GSA/NIBS Washington, DC., 1992.
- Loftness, V., V. Hartkopf, and A. Mahdavi. "Innovative Workplaces: Current Trends and Future Prospects." IFMA 92, "New Demands and New Directions," New Orleans, October 1992.
- Drake, P., P. Mill, V. Hartkopf, V. Loftness, F. Dubin, G. Ziga, and J. Posner. "Strategies for Health Promotion through User-Based Environmental Control: A Select International Perspective." IAQ Healthy Buildings Conference, Seattle, Washington, September 4-8, 1991.
- Hartkopf, V. and J. Gauchel. "A Computer Aided Design Approach for Total Building Performance." Proceedings of the Symposium on Building Systems Automation and Integration, University of Wisconsin-Madison, 1991.
- Hartkopf, V. and V. Loftness. "The Office of the Future: Intelligence in Office Design." IFMA Annual National Conference, Seattle, Washington, November 1989.
- Hartkopf, V. and V. Loftness. "The Impact of New Technologies on the Workplace: Integrative Approach to Offices of the Future." Proceedings of the Facilities 2000 Conference, 1989.

- Hartkopf, V., V. Loftness, and P. Mill. "The Need: Intelligent Building for 'Building Intelligence.'" In *Building Evaluation: Advanced in Theory, Methods and Applications: Proceedings of the Advanced Comfort Systems Conference*. New York: RPI, Troy, 1988.
- Hartkopf, V. F. Dubin, V. Loftness and P. Mill. "Working Towards Integrated, High Performance Building Environments That Are More Humane for the Individual Occupants." Presented at RPI Advanced Comfort Systems Conference. Published in *A New Frontier – Environments for Innovation*. Ed. Walter Kroner. 1988.
- Hartkopf, V. "Energy-Efficient Urban Infill Homes in Pittsburgh Community Reveal Outstanding Alternative to Fuel Subsidies But Some Air Quality Concerns." Proceedings of the Conseil International du Bâtiment Conference CIB 86. 1986.
- Hartkopf, V. and V. Loftness. "The Development of Intelligent Systems Towards Total Building Performance." Proceedings of the Architectural Research Centers Consortium (ARCC) Workshop, "The Impact of the Work Environment on Productivity," Washington, D.C., April 1985.
- Hartkopf, V. "Developing a Housing Topology as a Framework for Earthquake Engineering Research, Development and Demonstration." Proceedings of the Seminario Latinoamericano de Construcciones Sismo-Resistentes de Tierra. Peru, May 1983.
- Hartkopf, V. "Design Education through Research and Demonstration Projects." Proceedings of the ASCA Annual Meeting 1983, Santa Fe, New Mexico, 1983.
- Hartkopf, V. "Improving Housing to Better Withstand Earthquakes." Proceedings of the International Workshop on Earthen Housing in Seismic Areas. University of New Mexico, 1981.
- Hartkopf, V. and V. Loftness. "The Energy Retrofit of 'Glass Box' Office Buildings." Proceedings of the Designing and Managing Energy Conscious Commercial Building Workshop, Denver, Colorado, July 1982.
- Hartkopf, V., N. Yoran. "The Thermal Zone Module: An Approach to Integrating Energy Decisions into the Building Design Process." *ICEUM III, Third International Conference on Energy Use Management*. Berlin: Pergamon Press, 1981.
- Hartkopf, V. "The Role of Passive Solar Applications for Inner-City Housing and Rehabilitation." Proceedings of the Fourth National Passive Solar Conference. 1978.
- Hartkopf, V. "Space Enclosures for Emergencies in Developing Countries." Proceedings of the Fourth World Congress of Engineers and Architects. Tel Aviv, Israel, 1976.
- Hartkopf, V. "The Cost of Flexibility in Low Cost Housing" Proceedings of Adaptable Architecture, Institute of Lightweight Structures, University of Stuttgart, Frei Otto Institute, 1975.

SELECTED KEYNOTE SPEECHES IN THE AMERICAS, CANADA, EUROPE, ASIA, AND MIDDLE EAST

AMERICAS

March 2009, Invited Presentation at Rice University, Houston, TX

March 2007, Invited Presentation Wege Foundation, Grand Rapids, MI
May 2006, Invited Presentation, Building Automation Conference 2006, Michigan
March 2006, Dinner Speaker Siemens' Innovation Forum, New Jersey
October 2005, Co-convener/Presenter of ICEBO, Texas
April 2005, Invited Presentation Wege Foundation, Grand Rapids, MI
May 2005, Exhibition of BAPP/Invention Works to the Heinz Architectural Center,
Pittsburgh, PA
December 2005, Bosch 2020 Workshop, Introductory Lecture

"The Robert L. Preger Intelligent Workplace and The US General Services Administration's Adaptable Workplace Laboratory." Presentation given at the Guggenheim Museum in New York, New York, sponsored by WILA, October 28, 1999.

"The Intelligent Workplace — What's in it for FM Executives." ISFE -FM95: Managing Facilities in a Technological World, Cambridge, Massachusetts, Oct. 17, 1995.

"Integrated Intelligent Facility Design and its Effect on Productivity." The Associated General Contractors (AGC), Naples, Florida, January 21, 1995.

"Building Division" and the "Building Technology Committee." The Associated General Contractors (AGC), Portland, Oregon, September 30, 1994.

"New Methods for Constructing Buildings." The Associated General Contractors (AGC) Winter Meeting, Omaha, Nebraska, January 28, 1994.

"International Trends in Intelligent Building Design." The Washington Design Center, Washington, October 27, 1993.

"Important Advances have been obtained in the Engineering and Design of Intelligent Workplaces." IMEI, Mexico City, Mexico, June 23, 1993.

"Whole Building Performance in the International Arena." IFMA, Philadelphia, March 17, 1992.

"Office Buildings As If People Mattered" and "Design, Research, Development and Manufacturing for High Performance Buildings and the Role of Progressive Companies in Systems Integration." Clestra Hauserman Inaugural Address. Cleveland, Ohio, May 7-8, 1992.

"Impacts of Facility Environments on Learning." Tradeline Conference on Corporate Training, Education and Conference Facilities, San Francisco, California, November 29, 1990.

"Impacts of Workplace Quality on Worker Satisfaction & Productivity." Tradeline Conference on Cost-Effective Corporate Facilities Conference. Boston, Massachusetts, October 16, 1990.

CANADA

"Technology Trends and Creative Conversions," Creative Conversions Symposium, Edmonton, Alberta, Canada, September 3, 1996.

EUROPE

June 2005, Keynote speech at Archi-Prix International, Glasgow Scotland

June 2005, Keynote at Siemens International Journal Day, Stuttgart Germany

Siemens Presentation, March 10-11, 1998.

"GMD Presentation." At GFS Meeting. February, 25-26, 1998.

"Ökologisches Bauen an der Schwelle zum nächsten Jahrhundert." PacifiCorp Workshop, EXPO 2000 Press Conference. Hannover, Germany. November 27, 1995.

"Megatrends in Urban Development." Constructa Festvortrag. Hanover, Germany. February 9, 1992.

"The Office of the Future: Intelligent Office Design." International Building Symposium. University of Karlsruhe, Germany, October 14, 1989.

ASIA

June 2009, Co-convener/Presenter, China Sustainable Building Forum and Expo, Shanghai, China

March 2005, Keynote speech Tsinghua University at the inauguration of the Low Energy Demo Building, Beijing China.

"Global Implications of Energy Use in Buildings – The Role of the United States of America." *IBS Journal*. Vol. 2, No. 3 (September 2002): pp. 11-16. Presented as a Keynote Speech at The International Conference on Intelligent Building Systems, "IBS for Built Environment," Seoul, Korea, August 31-September 3, 2002.

"Beijing Energy Efficiency and Renewable Energy Demonstration Building." Presented at the ACHRB'2000 International Symposium. Shanghai, P.R. China, October 27, 2000.

"Interior Environmental Control Systems for an Intelligent Building." Presented at the ABSTRC Anniversary Conference. Yonsei University, Seoul, Korea, May, 1995.

"The Office of the Future: Designing Tomorrow's Buildings." Third Annual Seminar of the Construction Industry Development Board (CIDB). Only speaker at third Annual Seminar (gave two two-hour presentations and one one-hour presentation at day-long conference), served on conference panel. Singapore, October 23, 1990.

"Office of the Future: Cross Cultural and Technical Trends." International Symposium on New Office Innovation, sponsored by Nihon Keizai Shimbun, NOPA (New Office Promotion Association) and MITI (Ministry of International Trade and Industry). Tokyo, Japan, October 1988.

MIDDLE EAST

March 2007, Keynote Speaker, BuilConn, Riyadh, Saudi Arabia,

December 1996"Global Relevance of Total Building Performance." Theme 7: World-Wide Construction of Various Building Types. CIB-ASTM-ISO-RILEM Third International Symposium. Tel-Aviv, Israel, December 9-12, 1996.

INVITED LECTURES AT UNIVERSITIES: (published lecture series)

USA

University of Arizona; University at California, Berkeley; Carleton University; Catholic University, Washington DC; Hunter College NYC; Massachusetts Institute of Technology; University of Pennsylvania; SUNY Buffalo; University of Texas, Austin; and University of Wisconsin Extension Service, Georgia Institute of Technology, Bucknell University.

CANADA

University of Manitoba; Nova Scotia Technical University, Halifax; and University of Toronto.

EUROPE

University of Darmstadt; Deutsche Bauakademie, Berlin; University of Dortmund; Catholic University Leuven, Belgium; University of Essen; Technische Universität Wien; University of Stuttgart; University College of Cork Ireland, Inaugural Lecture, September 2007; Institut Paul Bocuse, one day workshop, Paris France, September 2007; University of Vinnova, Sweden, May 2007;

SOUTH AMERICA

Volker Hartkopf, Edo Rocha, Inc., Three-Day Seminar, Sao Paulo, Brazil, March 2007.

Volker Hartkopf and Vivian Loftness, Three-Day Seminar, Universidad Peruana De Ciencias Aplicadas, Lima, Peru, November 27-29, 1996

Universidad Católica, Lima, Peru; and University of Cuzco, Peru.

ASIA

Science University of Tokyo, National University of Singapore, Yonsei University, Seoul, Korea

INVITED LECTURES AT SEMINARS AND CONFERENCES

NORTH AMERICA

TTI Vanguard, Washington, DC. Smart and Environmentally Friendly Buildings, May, 2007

Grid Week, Washington, DC. Modernizing the US Electric Grid, The Future of Electricity, April, 2007

Sierra Nevada College, exhibition of work at the occasion of Setting of a Cornerstone, the dedication of the new Environmental Laboratory. August, 2005

Presentation at Robert Bosch on BAPP/Invention Works, September, 2005,

Presentation to Public Works and Government SC, Director Generals, November, 2005,

Lecture at Carnegie Mellon University. Cutting Edge Café Series. "Why do we have an Intelligent Workplace on Campus?" November 9, 2000.

Seminar given at the University of Pittsburgh, Department of Environmental and Occupational Health, October 8, 1998.

Volker Hartkopf and Vivian Loftness. "Connecting Building Performance to Corporate Goals." National Summit on Building Performance. Washington, DC, November 19, 1996

Vivian Loftness and Volker Hartkopf. World Workplace '96, IFMA Conference. Salt Lake City, Utah, October 5-8, 1996

LOF - Presentation "Participants: Building Products Business Innovation Group." Toledo, Ohio, June 12-13, 1996

OPUG 55th Symposium, presentation. "Planning and Designing Open Systems to meet Future Work Styles and Technologies." Washington, DC, April 29, 1996

Presentation Learning for the Environment. "The Built Environment." Volker Hartkopf, Speaker, sponsored by PRCST. Pittsburgh, Pennsylvania, March 8, 1996

Engineering and Construction for Sustainable Development in the 21st Century: An International Research Symposium and Technology Showcase, organized by: Civil Engineering Research Foundation (CERF), Washington, DC, February 4-8, 1996

Participated on "U.S. Experience with Innovative Practice" Panel. Gave presentation, "Infrastructure and the Constructed Environment," at the Federal Policies to Foster Innovation and Improvement in Constructed Facilities Symposium sponsored by the National Research Council, Commission on Engineering and Technical Systems Board in Washington, DC, June 8-9, 1995.

"Smart Buildings: Tomorrow's Intelligent Buildings Will Merge Advanced Technologies and Environmental Responsiveness Through Team Design Processes and User-Based Facilities Management." National Conference on Building Commissioning. St. Petersburg Beach, Florida, May 10, 1994.

"Beyond the Open Plan: New Space Planning Concepts to Support Organizational, Technical, and Environmental Change." Participant in session "Workplaces of the Future." Paper presented at RealMart '94, NAIOP Annual Conference, Boston, October 14, 1994.

"Defining 'Fresh Air' Architecture – International Approaches to Healthier Buildings and the Intelligent Workplace." IFMA '93. Denver, CO, October 10, 1993.

"Health, Well-Being, User Satisfaction, and Productivity in the Office Environment." Health & Safety '93 Conference. Toronto, Canada, April 7, 1993.

"Workplace Analysis: Defining Nurturing Environments." WestWeek '93. Los Angeles, California, March 17-19, 1993.

Invited Participant, ASHRAE Workshop on Indoor Environment and Productivity. Baltimore, Maryland, June 24-26, 1992.

"International Trends in Intelligent Building Design." NeoCon'92. Chicago, Illinois, June 18, 1992.

Invited Participant, GSA, The Individual Workplace. Washington, D.C., June 3, 1992.

"The Office of the Future: Intelligence in Office Design—General Overview of International Finds of the Advanced Building Systems Integration Consortium." IFMA National Annual Conference. Seattle, Washington, November, 1989.

"Total Building Performance Towards Productive Work Environments." Office Planner and Users Group 42nd Symposium. Washington, D.C., October 16-19, 1989.

"Architecture for Art's Sake—Field Evaluation of Museum Performance for Future Design." American Association of Museums Annual Conference. June 7, 1989.

"The European Community: A Different Interiors Market." AIA (American Institute of Architects) National Interiors Committee. Washington, DC. Design Center, April 1989.

"Making Museum Spaces Work: Visitor Needs in Designing Architecture for Art's Sake." The Carnegie Museum. Pittsburgh, February 24, 1989.

Delivered summary report, Remaking Cities Conference, with HRH Prince Charles and Senator John Heinz. Pittsburgh, PA, March, 1988.

CANADA

Presentation, Toronto, National Green Build Forum, November 15, 2005

Loftness, V., V. Hartkopf, P. Mathew, and S. Kumar. United States State Department Workshop presentation entitled: "Facilities Managers as Indispensable Partners in Corporate Strategic Planning." Held in Vancouver, Canada, October. 29-November 1, 1996.

EUROPE

V. Hartkopf, Politische ökologie ¹⁰⁵, "Startschuss für eine transatlantische Brücke", Presented Loccum, Paris, University Loccum, May 2007

CIB-W78 Conference, Invited presentation/paper (Dresden Paper), Germany, July, 2005

Universidad Ibero Americana, Keynote Sustainability in Green Design in Architecture, November, 2005

Presentation to Prof Dr. Norbert Walter, Chief Economist, Deutsche Bank, regarding the Transatlantic Bridge, December, 2005

"Information Technology for Construction Management and Building Performance Evaluation Support: a North-America Perspective." Paper presented at the International Kolloquium über Anwendungen der Informatik und Mathematik in Architektur und Bauwesen 1997 (IKM), Bauhaus – Universität Weimar. Weimar, Germany, 1997.

Bernd Heuer 10. Fach-Dialog "Facility Management." Workshop. Frankfurt, Germany, October 18-24, 1996

Presentation at the 61 Management. "Corporate Real Estate Management and Strategic Facility Management." Frankfurt, Germany, June 3-4, 1996.

"Stand und Entwicklung von CAAD Systemen in den USA." Zebra Workshop. Essen, Germany, June 16, 1994.

"Environmental Consciousness in the Intelligent Workplace." International Seminar — Industriebau, Radikale Umstrukturierung, Neue Kriterien für Standort und Gebäude, Praxisreport 1994. Vienna, Austria, June 8-10, 1994.

"Building Performance." Third International Congress on Human Ecology. Vienna, Austria, August 1-7, 1993.

"Intelligent Buildings." Facility Management Congress. Wiesbaden, Germany, June 15-17, 1993.

Invited participant, Carnegie Bosch Institute's International Conference, "The Challenge of Multinational Competition." Stuttgart, Germany, May 12-14, 1993.

"Advanced Workplace Demonstration Project." Building Design, Technology & Occupant Well-Being in Temperate Climates—International Conference. Brussels, Belgium, February 17-19, 1993.

"Megatrends in Urban Development." Constructa. Hanover, Germany, February 8, 1992.

"Diagnosis-Analysis-Trends." Energy-Environment-Building Forming Future Lifestyles. Essen, Germany, January 24, 1992.

Invited participant and International Partnership. Wolfsburg, Germany, October 23-25, 1991.

Presentation to Electricité de France, "Bâtiments Intelligents." Paris, France, June 25, 1991.

Presentations on "The Office of the Future: Intelligence in Office Design" to French building industry executives at Usinor Sacilor, LaFarge, Sogea and St. Gobain. Paris, France, November 23-27, 1990.

Invited Participant and CMU Team Leader: Ecodome Project charette meeting. Hosted by the City of Chesterfield, Ecodome developers, and the Duke of Devonshire. Chesterfield, England, November 20-22, 1990.

"International Partnership Initiative," an effort to promote international cooperation between industrialists and academics in order to meet the challenges of the radical changes in Europe with their long-term and global implications. Sponsored in part by Volkswagen AG. Wolfsburg, Germany, September 12-14, 1990.

"Building Diagnostics - Erfahrungen mit neuen amerikanischen and deutschen Bürobauten" and "Bauen als Lernprozess: Praktizierte Entwicklungspartnerschaft zwischen Organisatoren und Baufachleuten." Mobilität und Wandel in Bürogebäuden, Munich, Germany, June 8, 1990.

ASIA

"International Collaboration on the Intelligent Working Place." Presentation to Pan Pacific Symposium. Nagoya University, Japan, March 18, 1995.

"International Trends: Total Building Performance of Facility Management." Presentation to JFMA. Tokyo, Japan, December 10, 1993.

"The Intelligent Workplace." Presentation to AIJ. Tokyo, Japan, December 15, 1993.

"The Office of the Future: Intelligence in Office Design." Presentation to Japanese building industry executives at Taisei Corporation, Mori Building Co., Mitsubishi Heavy Industries, Nihon Sekkei. Tokyo, Japan, October 27-November 2, 1990.

"Designing Tomorrow's Buildings." Presentation to the Singapore Association of ASHRAE members. Singapore, October 24, 1990.

Invited guest lecturer at Ark Hill. Tokyo, Japan, October, 1988.

MIDDLE EAST

"Gulf Research Project", Qatar, United Arab Emirates, January 2007

"Building as a Power Plant", Dubai, United Arab Emirates, February 2007

"Hi Tech - Low Tech, Healthy, Intelligent Buildings." Paper presented at the IB/IC Intelligent Building Congress . Israel, February 7, 1995.

ADMINISTRATION

Chairman, United Nations Environmental Programme (UNEP) Sustainable Building Construction Initiative (SCBI), Washington DC, September 2007 to present.

Director, Center for Building Performance and Diagnostics, Carnegie Mellon University; 1983 to present.

Associate Director, Institute of Building Sciences, CMU, 1981-83.

Director, Advanced Building Studies Program, CMU, 1975-81.

Treasurer, Architectural Research Centers Consortium (ARCC), 1977-79.

UNIVERSITY SERVICE AT CARNEGIE MELLON

Member, Budget & Financial Affairs Committee, 1999-2000

Chair, Departmental Review Committee, 1994-95.

Member, Executive Committee, Faculty Senate, 1990-91.

Observer, Board of Trustees, 1990-91.

Member, Presidential Search Committee, 1989-90.

Chairman, Faculty Senate, 1989-90*.

Chairman, College Review Committee, 1988-89.

Chairman, College Re-appointment Promotion and Tenure Committee, 1988-89.

Chairman, Departmental Review of Architecture, 1988-89.

Member, Departmental Head Search Committee, 1988-89.

Member, University Educational Facilities Committee, 1987-Present.

Member, University Re-appointment and Tenure Committee, 1988-89.

Member, Committee for the Evaluation of the President, 1986-87.

*As Faculty Senate Chair: Initiated major efforts:

- Standing Committee - financial status of the university.
- Constitutional Advisory Committee - redrafting the constitution, strengthening financial oversight powers of faculty, relationship with Board of Trustees and Faculty Senate and institutional structure.
- International Forum to heighten university-wide understanding of international developments.
- Latin American Initiative.

PUBLIC SERVICE

IFMA Research Planning Workshop. Houston, TX. December 6, 1995.

Research Associate, "Courthouse of the Future" Project, Allegheny County Courts, Bicentennial Commission, 1988.

Bicentennial Commission of Allegheny County, Greening of Pittsburgh Committee, 1988.

Advisor, Presbyterian Association on Aging, "Enhancing Senior Citizen Housing Options," 1988

German Marshall Fund Traveling Grant, "Bundesgartenschau"; 1981-82, led a professional team in a study of urban park development in Germany.

Advisory Committee, Project Pacesetter, Pittsburgh Regional Planning Association; 1979-81.

State of Pennsylvania, Governor's Energy Council, jury member, Appropriate Technology proposals; 1979.

American Institute of Architects, National Committee on Automated Practice Technology; committee member, 1973-75.

MEMBERSHIPS

American Association for the Advancement of Science (AAAS)

Architektenkammer Baden-Württemberg, Germany

ASTM Committee E.6, founding member of committee on Whole Building Performance

Club of Rome, United States Section

International Facility Management Association (IFMA)

Integrated Construction Institute (ICI)

Intelligent Building Institute (IBI)

Oceans Arks International (OAI)

The Society of Building Science Educators

Pittsburgh History and Landmark Foundation (Board Member)