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EDUCATION

2009-2014 (expected) — Drexel University Philadelphia, PA
Doctor of Engineering, College of Engineering *(Advisor: Dr. Jin Wen)*

Dissertation Title: Human Behavior and Low Energy Architecture: Linking Environmental Adaptation, Personal Comfort, and Energy Use in the Built Environment

2003-2008 — Carnegie Mellon University Pittsburgh, PA
Bachelor of Architecture, College of Fine Arts

2007 — Lexia International Spring Semester Abroad Berlin, Germany

RESEARCH EXPERIENCE

2011-Present — Human Behavior and Low Energy Architecture: Linking Environmental Adaptation, Personal Comfort, and Energy Use in the Built Environment
Drexel University, Philadelphia, PA

Funding Source: U.S. National Science Foundation
Description: Developed agent-based model for simulating adaptive behaviors of office occupants as part of whole building energy simulation; validated model with data from one year longitudinal study of occupant behavior in field offices; currently integrating validated model into larger occupant behavior simulation tool for practical and academic use
Key Outcomes: New distributions of individual-level thermal comfort responses published; field database of behavior/comfort responses compiled and analyzed from one year of measurements; Human And Building Interaction Toolkit (HABIT) developed for use in considering occupant behavior as part of whole building energy simulation

2011-2012 — Greater Philadelphia Innovation Cluster (GPIC): Policy, Markets and Behavior Team
Drexel University, Philadelphia, PA

Funding Source: U.S. Department of Energy
Description: Conducted, coded, and analyzed semi-structured interviews with Philadelphia area office occupants as part of focus on adaptive occupant behavior within larger GPIC aim of twenty percent reduction in regional commercial building energy use by 2020
Key Outcomes: Preliminary findings regarding behavioral frequency, sequencing, and causal factors included in GPIC Year One Report

2009-2012 — Framework for Assessing the Energy Efficiency Strategies of the Philadelphia Housing Authority (PHA)
Drexel University, Philadelphia, PA

Funding Source: U.S. Department of Housing and Urban Development
Description: Conducted, coded, and analyzed semi-structured interviews with PHA residents in order to identify potential energy behavior interventions in low-income housing and suggest important question types for large scale structured surveys in this setting
Key Outcomes: General scoring framework for semi-structured interviews published; potential behavioral interventions and survey question types included in Final Report to PHA

PUBLICATIONS & PRESENTATIONS

Peer-Reviewed Journal Publications (Published)

2013

Langevin J, Wen J and Gurian P L. Modeling thermal comfort holistically: Bayesian estimation of thermal sensation, acceptability, and preference distributions for office building occupants. Building and Environment, 2013; 69:206-226.

Langevin J, Gurian P L and Wen J. Reducing energy consumption in low income public housing. Applied Energy, 2013; 102:1358-1370.

Cuéllar G and **Langevin J**. Space *per se*. interpunct , 2013; 1:60-75. **Invited submission*

2012

Langevin J, Wen J and Gurian P L. Relating occupant perceived control and thermal comfort: Statistical analysis on the ASHRAE RP-884 database. HVAC&R Research, 2012; 18(1-2):179-194. **Invited submission*

2011

Langevin J. Reyner Banham: In Search of an Imageable, Invisible Architecture. Architectural Theory Review, 2011;16(1):2-21.

Peer-Reviewed Journal Publications (Under Review or In Preparation)

Hamilton M, **Langevin J**, Goldberg A, Casey P, Wen J and Gurian P L. Microeconomic Decision-Making Regarding Commercial Building Retrofits. (Submitted to Energy Efficiency).

Langevin J and Wen J. Tracking the human-building interaction: Findings from a longitudinal field study of occupant behavior in air-conditioned offices. (In preparation).

Langevin J and Wen J. Simulating the human-building interaction: Development and validation of an agent-based model of office occupant behavior. (In preparation).

Langevin J and Wen J. Human behavior and low energy architecture: Considering the active, adaptive building occupant in building performance simulation. (In preparation).

Peer-Reviewed Conference Proceedings

2014

Langevin J and Wen J. Including occupants in building performance simulation: Integration of an agent-based occupant behavior model with *EnergyPlus*. Paper accepted to: 2014 ASHRAE/IBPSA-USA Building Simulation Conference; September 12-14, 2014; Atlanta, GA.

Langevin J, Wen J, and Gurian P L. Simulating the human-building interaction: Development and validation of an agent-based model of office occupant behaviours. Presented at: Windsor Conference 2014; April 10-13, 2014; Windsor Great Park, UK.

2013

Langevin J, Wen J and Gurian P L. Tracking Long-Term Occupant IEQ Outcomes: A Longitudinal Survey Tool. Presented at: IAQ 2013; October 15-18, 2013; Vancouver, CAN.

2012

Langevin J, Wen J., Gurian P L, Hsieh S, Novosel D. Behaviour in the Built Environment: Findings from a Survey of Occupants in Twenty Air-Conditioned Office Buildings. Presented at: Healthy Buildings 2012; July 08-12, 2012; Brisbane, AUS.

2011

Langevin J, Wen J., Hsieh S, Novosel D, Waring M S. Occupant Comfort, Productivity, and Personal Control in Twenty Air Conditioned Office Buildings. Presented at: Indoor Air 2011; June 05-10, 2011; Austin, TX.

2010

Langevin J, Wen J and Gurian P L. The Psychology of Comfort: Statistical Analysis on the Relation of Occupant Perceived Control to Thermal Comfort using the ASHRAE RP-884 Database. Presented at: IAQVEC 2010; August 15-18, 2010 Syracuse, NY.

FELLOWSHIPS & AWARDS

2014	**Best Dissertation, Mathematics and Engineering** Drexel University, Philadelphia, PA
2011-Present	**National Science Foundation Fellowship** Drexel University, Philadelphia, PA
2014	**1st Place Poster, Drexel Graduate Research Forum** Drexel University, Philadelphia, PA
2013-2014	**ASHRAE Grant-In-Aid, Member Club Designation** Drexel University, Philadelphia, PA
2014, 2012	**Drexel International Travel Award** Drexel University, Philadelphia, PA
2011	***Indoor Air 2011* Scholarship (NSF funded)** Drexel University, Philadelphia, PA
2009-2011	**GAANN Fellowship** Drexel University, Philadelphia, PA
2009-2011	**Dean's Fellowship** Drexel University, Philadelphia, PA
2010	**Drexel Green Grant** Drexel University, Philadelphia, PA
2009	**Kling-Lindquist Scholarship** Drexel University, Philadelphia, PA
2007	**Fourth Year Design Award Nomination** Carnegie Mellon University, Pittsburgh, PA
Fall 2005, Fall 2006, Fall 2007, Spring 2008	**School of Architecture Honors** Carnegie Mellon University, Pittsburgh, PA
Fall 2006, Fall 2007	**Dean's List** Carnegie Mellon University, Pittsburgh, PA

INDEPENDENT PROJECTS

2014

"Queensway Crossing", with Gabriel Cuéllar and Matthew Scarlett
Entry to *2014 ENYA: Queensway Connection Competition* (AIA, New York, NY)

2013

"Surface Treatment", with Gabriel Cuéllar
Entry to *2014 Lausanne Jardins Competition* (City Council, Lausanne, CH)

2008-2011

"jargon, etc." http://jargonetcetera.blogspot.com/
Architecture blog with Joshua Cummings and Gabriel Cuéllar

2010

"Cross Cultivation", with Joshua Cummings and Gabriel Cuéllar

Awards & Exhibitions
Second Place, *2010 Natural Talent Design Competition* (USGBC, New York, NY)
Exhibited at the Trespa Design Center, New York, NY

2009

"Mississippi Migration", with Joshua Cummings and Gabriel Cuéllar

Awards & Exhibitions
Highly Commended Entry, 2009 *Ecohouse Competition* (Concrete Centre, London, UK)
Honorable Mention, 2009 *Collaboration with Nature Competition* (S. Korean Presidential Committee on Green Growth, Seoul, KOR)
Exhibited at The Building Centre, London, UK and Seoul Museum of History, Seoul, KOR

2008

"Networked Sensorium", with Gabriel Cuéllar
Entry to 2008 *Situated Technologies Competition* (Architectural League of NY)

PROFESSIONAL EXPERIENCE

09.2007-05.2008

Carnegie Mellon Digital Fabrication Lab Carnegie Mellon University, Pittsburgh, PA
Lab Monitor/Fabrication Machine Instructor, member of Fabrication Lab Design/Build team

05.2007-08.2007

Fisher Architecture Pittsburgh, PA
Freelance subcontractor in the construction of the architect's energy-efficient home

06.2004-12.2005
(Intermittent)

TLBArchitecture Chester, CT
Intern Architect working on design drawings for various new buildings and renovations

TEACHING & MENTORING EXPERIENCE

12.2011-03.2012 **Research Mentor** Drexel University, Philadelphia, PA
Mentored local high school student Aaron Goldberg in survey data analysis methods

06.2010-09.2010 **NSF REU Program** Drexel University, Philadelphia, PA
Research Experiences for Undergraduates (REU) Student Mentor and Poster Judge

01.2010-04.2010 **HVAC Equipment (MEM 414)** Drexel University, Philadelphia, PA
Teaching Assistant for undergraduate-level course *(Instructor: Dr. Jin Wen)*

06.2007-09.2007 **Summer Architecture School** Carnegie Mellon University, Pittsburgh, PA
Instructor of studio and drawing courses for high school students *(Director: Dee Briggs)*

PROFESSIONAL MEMBERSHIPS

International Society for Indoor Air Quality and Climate (ISIAQ), American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

JOURNAL REVIEWER

Building & Environment (2011, 2013, 2014), Applied Energy (2013, 2014), Journal of Architectural Engineering (2014)

SKILLS

Proficient

MATLAB, R Computing, Building Controls Virtual Testbed (BCVTB), SPSS, Netlogo, Adobe Creative Suite (Photoshop, Illustrator, InDesign, Acrobat), MS Office Suite (PowerPoint, Word, Excel), SurveyGizmo, HOBO datalogging, WattsUp? plug load metering

Familiar

EnergyPlus, Rhino, AutoCAD, SolidWorks (CNC Milling, Laser Cutting, 3D Printing)

REFERENCES

Jin Wen, Ph.D. Associate Professor, Department of Civil, Architectural and Environmental Engineering, Drexel University, 3141 Chestnut St., Philadelphia, PA 19104, (215) 895-4911, jinwen@drexel.edu

Charles N. Haas, Ph.D. Department Head, LD Betz Professor of Environmental Engineering, Department of Civil, Architectural and Environmental Engineering, Drexel University, 3141 Chestnut St., Philadelphia, PA 19104, (215) 895-2283, haas@drexel.edu

Kai K. Gutschow, M.Arch / Ph.D. Associate Professor, School of Architecture, Carnegie Mellon University, 201 College of Fine Arts, Pittsburgh, PA, 15213, (412) 268-7999, gutschow@andrew.cmu.edu

Patrick L. Gurian, Ph.D. Associate Professor, Department of Civil, Architectural and Environmental Engineering, Drexel University, 3141 Chestnut St., Philadelphia, PA 19104, (215) 895-2889, plg28@drexel.edu