

David Fannon AIA | MEMBER ASHRAE | LEED-AP BD+C

Assistant Professor Jointly Appointed
School of Architecture, College of Arts Media and Design
Department of Civil & Environmental Engineering, College of Engineering
Northeastern University

BACKGROUND

EDUCATION

Master of Science, Architecture **University of California, Berkeley**, 2015
Thesis: *Developing Low-Energy Personal Thermal Comfort Systems: Design, Performance Testing, and Research Methods*

Bachelor of Architecture, **Rensselaer Polytechnic Institute**, 2005
Summa Cum Laude

PROFESSIONAL REGISTRATION

New York State **Registered Architect** License 033927-1 since 2009

USGBC **LEED Accredited Professional** Building Design + Construction since 2013

ACADEMIC POSITIONS

Northeastern University

Assistant Professor 2013-present

Jointly appointed: Architecture (75%), Civil & Environmental Engineering (25%). Affiliated faculty in Public Policy & Urban Affairs

University of California, Berkeley

Graduate Student Instructor, 2011 spring

Staff Researcher, 2011 fall

Graduate Student Researcher, 2009-2011

Rensselaer Polytechnic Institute

Visiting Professor 2008 spring

PROFESSIONAL MEMBERSHIPS

American Institute of Architects (AIA)

Boston Society of Architects (Board Member 2015-2018)

ASHRAE

Society of Building Science Educators (SBSE)

Building Technology Educators Society (BETES)

HONORS & AWARDS

2017-2019 Latrobe Prize: *Future-Use Architecture: Design for Persistent Change*

2016 Upjohn Research Award: *Building Resilience*

2005 Alpha Rho Chi Medal

PROFESSIONAL PRACTICE

- 2015-2018 **Fickett + Walker-Fickett** Sharon, MA
Consulting Building Scientist
- 2012-2013 **Syska Hennessy Group** New York, NY
Senior High-Performance Specialist & Senior Associate
- 2005-2009 **Burt Hill (now Stantec)** Washington, DC
BIM Leader, Intern Architect
- 2004-2005 **Atelier Ten** New York, NY
Environmental Designer
- 2004 **Resolution 4: Architecture** New York, NY
Intern Architect
- 2000-2003 **Gemmola McWilliams Architects** Hawthorne, NY
Intern Architect

SCHOLARSHIP

* *Designates a student co-author*

PEER-REVIEWED PUBLICATIONS

- 2019 Troup, Luke*; Phillips, Robert*; Eckelman, Matthew; Fannon, David. Effect of Window-to-Wall Ratio on Measured Energy Consumption in US Office Buildings. *Energy and Buildings*. Presently Under Review
- Troup, Luke*; Eckelman, Matthew; Fannon, David. Simulating Future Energy Consumption in Office Buildings Using an Ensemble of Morphed Climate Data. *Applied Energy*. Revise and Resubmit.
- Mirzaee, Sahar*; Fannon, David; Ruth, Matthias. A Comparison of Preference Elicitation Methods for Multi-Criteria Design Decisions About Resilient and Sustainable Buildings. *Environment Systems & Decisions*. Published online April 2019.
- 2018 Fannon, David; Laboy, Michelle; Wiederspahn, Peter. Dimensions of Use: From Determinism to a New Humanism. *ENQUIRY: The ARCC Journal*. Vol 15, No 1. November 2018. Pages 25-45.
- Deng, Hengfang*; Fannon, David; Eckelman, Matthew. Predictive modeling for US commercial building energy use: A comparison of existing statistical and machine learning algorithms using CBECS microdata. *Energy and Buildings*. Vol. 163. No. 15 March 2018. Pages 34-43.
- 2017 Phillips, Robert*; Troup, Luke*; Fannon, David; Eckelman, Matthew. Do Resilient and Sustainable Design Strategies Conflict in Commercial Buildings? A Critical Analysis of Existing Resilient Building Frameworks and Their Sustainability Implications. *Energy and Buildings*. Vol. 146, July 2017. Pages 295-311.
- 2016 Laboy, Michelle and Fannon, David. Resilience Theory and Praxis: A Critical Framework for Architecture. *ENQUIRY: The ARCC Journal*. Vol. 13, No 1. December 2016. Pages 39-53.

Fannon, David and Laboy, Michelle. Teaching Building Science in Design Studio. *Journal of the National Institute of Building Science*. Vol. 4, No. 6. 2016. Pages 22-25.

- 2015 Taub, M.*; Zhang, H.; Arens, E.; Bauman, F.; Dickerhoff, D.; Fountain, M.; Pasut, W.; Fannon, D. J.*; Zhai, Y.; Pigman, M. The use of footwarmers in offices for thermal comfort and energy savings in winter. *Building and Environments*. Vol. 104, October 2015. Pages 233-243.

CONFERENCE PAPERS (PEER REVIEWED)

- 2019 Fannon, D. and Laboy, M. Methods of Knowing: Grounded Theory in the study of future-use architecture. *Future Praxis: Applied Research as a Bridge Between Theory and Practice*. ARCC International Conference. Toronto. May 29-June 1, 2019. In press.

Reed, A.* and Fannon, D. Microclimates at the Sixth Façade. *Integration and Innovation*. Building Technology Educators' Society Conference. Amherst, MA. June 19-22, 2019. In Press.

- 2018 Reese-Julian, J.* and Fannon, D. Conserving Energy, Conserving Buildings: Airtightness Testing in Historic New England Homes. *International Building Physics Conference*. Syracuse, NY. September 25, 2018.

Aduralere, T.*; Isaacs, J.A.; Fannon, D. Passive Survivability in Residential Buildings during Heat Waves under Dynamic External Conditions. *International Building Physics Conference*. Syracuse, NY. September 24, 2018.

Laboy, M. and Fannon, D. Resilient Homes Online Design Aid: Connecting Research and Practice for Socially Resilient Communities. *Intersections: Design and Resilience*. Association of Collegiate Schools of Architecture & American Institute of Architects. New York, NY. June 22, 2018

Troup, L.*; Phillips, R.*; Eckelman, M.; Fannon, D. Assessing the Triple Bottom Line of Alternative Window to Wall Ratios as Resilient Adaptations in Office Buildings. *Building Enclosure Science & Technology Conference*. National Institute of Building Sciences. Philadelphia, PA. April 15-18, 2018.

- 2016 Troup, L.* and Fannon, D. Morphing Climate Data to Simulate Building Lifecycle Energy Consumption. *SimBuild 2016*, ASHRAE/IBPSA-USA, Salt Lake City, UT. August 8-12 2016

- 2015 Laboy, M. and Fannon, D. Learning Comprehensive Building Design through a Resilience Framework, *Architecture and Resilience on the Human Scale*, University of Sheffield, Sheffield, UK. September 11, 2015.

INVITED BOOK CHAPTERS

- 2019 Laboy, Michelle and David Fannon. "RHOnDA: An Online Tool to Help Homeowners and Tenants Increase Resilience." In *Adapting Buildings for a Changing Climate*, edited by N. Rajkovich and S. Holmes. Under review

Mirzaee, Sahar*; Matthias Ruth; and David Fannon. "Reconciling Diverse Perspectives of Decision Makers on Resilience and Sustainability." In *Handbook on Resilience of Socio-Technical Systems*, edited by Matthias Ruth and Stefan Goessling-Reisemann. Edward Elgar. 2019. Pages 360–386.

NON-REFEREED PUBLICATIONS

- 2014 Eckelman, M.J. and Fannon, D. Information Barriers and Enablers for Sustainable Buildings and Construction. Proceedings of NIST-ASCE-ASME workshop on *Sustainable Construction and Manufacturing*, Reston, VA, June 12-13, 2014

PRESENTATIONS

- Forthcoming 2019 Laboy, M.; Wiederspahn, P.; Fannon, D. Creativity, Calculation, & Curation: Research as a framework for cross-disciplinary collaboration. *Reynolds Symposium: Education by Design*. Portland, OR. Oct. 17-18, 2019.
- Fannon, D. and Laboy, M. Attributes of Future-Use Architecture. *A'19: The Conference on Architecture*. American Institute of Architects. Las Vegas NV. June 6-8, 2019.
- Fannon, D. and Laboy, M. Methods of Knowing: Grounded Theory in the study of future-use architecture. *Future Praxis: Applied Research as a Bridge Between Theory and Practice*. ARCC International Conference. Toronto. May 29-June 1, 2019.
- 2019 Wiederspahn, P.; Laboy, M.; Fannon, D. *PERSISTENT: Architects and Buildings Talking about the Future*. Kansas State University. Manhattan, KS. April 8, 2019.
- Fannon, D. (Moderator) Experiments in Being Versus Becoming. *Black Box: Articulating Architecture's Core in the Post-Digital Era* Association of Collegiate Schools of Architecture. Pittsburgh, PA. March 30, 2019.
- 2018 Laboy, M. and Fannon, D. RHOnDA: An Online Tool to Help Homeowners and Tenants Increase Resilience. *Adapting Buildings for a Changing Climate*. NYSERDA & University at Buffalo. Albany, NY. October 22, 2018
- Fannon, D.; Wiederspahn, P.; Laboy, M. The Architecture of Persistence. *Keynote address for the 2018 AIA New England Chapter Design Awards*. Boston, MA. October 12, 2018.
- Fannon, D. Conserving Energy, Conserving Buildings: Airtightness Testing in Historic New England Homes. *International Building Physics Conference*. Syracuse, NY. September 25, 2018.
- Fannon, D. Future-Use Architecture: Research Methods. *Collaborative Research Summit*. American Institute of Architects. Minneapolis, MN. July 25, 2018.
- Fannon, D.; LeBlanc, M.; McCoy, R.; Minnis, E. Latrobe Prize: Future-Use Architecture. *A'18: The Conference on Architecture*. American Institute of Architects. New York, NY. June 22, 2018.
- Laboy, M. and Fannon, D. Resilient Homes Online Design Aid Connecting Research and Practice for Socially Resilient Communities. *Intersections DESIGN and RESILIENCE*. Association of Collegiate Schools of Architecture & American Institute of Architects. New York, NY. June 22, 2018.
- Troup, L*; Phillips, R*; Eckelman, M; Fannon, D. "Assessing the Triple Bottom Line of Alternative Window to Wall Ratios as Resilient Adaptations

- in Office Buildings." *Building Enclosure Science & Technology Conference*. National Institute of Building Sciences. Philadelphia, PA. April 15-18, 2018.
- Fannon, D. "Vernacular Building Science at the Gropius House." *Vernacular at Mid-Century, 1930-1970*. Vernacular Architecture Forum, New England Annual Meeting. Sturbridge, MA. March 24, 2018.
- Fannon, D. "Evaluating Resilient & Sustainable Buildings" *Sustain, Strengthen, Secure*. National Institute of Building Sciences. Washington, DC. January 9, 2018.
- 2017 Flint, M.; Warn, G.; van de Lindt, J.; Fannon; D. Sasani, M. "Multi-Hazard Resilient and Sustainable Buildings." *Superior Performance in a Changing Environment*. ASCE Congress on Technical Advancement. Duluth, MN. September 13, 2017.
- Fannon, D. "Designing Uncertainty: Scenario Planning in Design Studio." *Craft*. Society of Building Science Educators. Sublimity, OR. July 25, 2017.
- Phillips, R.*; Troup, L.*; Fannon, D.; Eckelman, M. "Predictive Ability of Window to Wall Ratio for Commercial Building Energy Consumption." *Science in Support of Sustainable and Resilient Communities*. ISIE-ISSST. Chicago, IL. June 25, 2017.
- Fannon, D. "Hands-On Labs for Better Buildings." *Conference for Advancing Evidence-Based Teaching*. Center for Advancing Teaching and Learning through Research. Boston, MA. May 2, 2017.
- Fannon, D. "Data Modeling to Evaluate Resilience in Residential Buildings." *Annual Meeting*. American Association of Geographers. Boston, MA. 5 April 2017.
- 2016 Troup, L.*; Fannon, D. "Morphing Climate Data to Simulate Building Lifecycle Energy Consumption." *SimBuild 2016*, ASHRAE/IBPSA-USA, Salt Lake City, UT. August 10-12 2016
- 2015 Laboy, M. and Fannon, D. "Learning Comprehensive Building Design through a Resilience Framework." *Architecture and Resilience on the Human Scale*, University of Sheffield, Sheffield, UK. September 11, 2015.
- 2013 Fannon, D.; Bolin, R.; & Kahnkari, K. "Engineered Natural Ventilation: Beyond the well-behaved arrows." *Greenbuild*. United States Green Building Council. Philadelphia, PA. November 20, 2013.
- 2007 Fannon, D.; Gregg, T.W.; Massey, J.; Wing, A.K. "Rightsizing: Connecting Strategic Goals to Design and Utilization Patterns." *Society for College and University Planning Mid-Atlantic Regional Conference*. University of Delaware, Newark. 26 March 2007.

EXHIBITIONS

- Forthcoming February 2020 *DURABLE: Sustainable material ecologies, assemblies and cultures*. Curated by Michelle Laboy, David Fannon and Peter Wiederspahn with Chris Grimley & Matthew Eckelman. Selected in peer-reviewed international competition @ BSA Space, Boston, MA. Feb 21-May 31, 2020.

2018-2019 *PERSISTENT: Evolving Architecture in a Changing World*. Curated by Peter Wiederspahn, Michelle Laboy, and David Fannon.
@A+D Museum, Los Angeles, CA. December 8, 2018-February 17, 2019.
@Kansas State University, Manhattan, KS. April-May 2019.

2013 Oslo Architecture Triennale. Design and prototype personal comfort system developed at the Center for the Built Environment. Sept-Dec 2013.

EXTERNAL GRANTS (FUNDED)

2019 PI (with M. Laboy, P. Wiederspahn and M. Eckelman) BSA Foundation grant for exhibition: *DURABLE*. Funded: \$50,000.

2017-2019 PI (With M. Laboy and P. Wiederspahn) American Institute of Architects College of Fellows Latrobe Prize. *Future-Use Architecture: Design for Persistent Change*. Funded: \$100,000.

2015-present Co-Investigator (with M. Sasani, M. Eckelman, M. Ruth, L. Baise & W. Coulbourne). National Science Foundation CMMI #1455450. *Decision Frameworks for Resilient and Sustainable Buildings*. Funded: Total: \$1,122,687. 20% share: \$280,198.57

2015-2017 Co-PI (with M. Laboy & M. Eckelman) AIA Upjohn Research Grant. *Building Resilience: A Tool for Adaptability Planning and Decision-Making*. Funded: \$28,015

2014 Co-PI (with M. Laboy) Building Resilient Boston Partnership. *Resilience Metrics for Urban Building Design*. Funded: \$12,000.

EXTERNAL GRANTS (NOT FUNDED)

2018 PI (with M. Laboy, C. Heartveld, M. Eckelman) National Science Foundation. *Proof-Of-Concept of Resilient Homes Online Design Aid (RHONDA) Using Gaming for Community Engagement*.

PI (with M. Laboy, M. Eckelman, C. Heartveld,) Massachusetts Technology Transfer Center ACORN Innovation Fund. *Resilient Homes Online Design Aid (RHONDA)*.

2017 Co-Investigator (with S. Felton, A. Myers, & P. Malo) National Science Foundation SAEM. *GOALI: Multi-Physics Models of Foam Composites and Self-Assembling Components for Building Construction*

2016 Co-Investigator (with S. Felton & A. Myers) National Science Foundation SAEM. *Folding Materials, Actuators, and Geometries for Self-Erecting Structures and Adaptive Livable Spaces*.

INTERNAL GRANTS (FUNDED)

2017-2018 Co-PI CAMD 2025 Deans Fellowship (With M. Laboy and C. Harteveld) *Designing and Engaging Sustainable Cities and Communities*. Funded: \$15,000.

2016 PI Northeastern University Provost's Teaching and Learning Grant. *Capturing the Sun: Evaluating Heliadons And Sky-Simulators as Tools For Experiential Learning In Architecture Education*. Funded \$5,000.

- 2015-2016 Co-PI (with M. Laboy & M. Eckelman) Northeastern University Tier-1 Seed Grant. *Building Resilience: A Tool for Adaptability Planning and Decision-Making*. Funded: \$50,000
- 2015-2016 PI Northeastern University CAMD Faculty Research and Creative Activity Incentive Grant. *Conserving Energy, Conserving Buildings* Funded \$3,000
- 2015 Co-PI (with M. Laboy, P. Wiederspahn & I. Rupnik) Northeastern CAMD Faculty Research and Creative Activity Incentive Grant. *Prefabricated Housing: Industrial and International Models* Funded: \$10,000.
- 2014-2015 Co-PI (with P. Wiederspahn, G Kowalski & S. Kamarthi) Northeastern University Tier-1 Seed Grant. *Cost-effective Thermal Envelope Retrofits in Wood-frame Residential Buildings*. Funded: \$49,500.

PEER REVIEWER

- 2017-2018 International Building Physics Conference
- 2017-2018 Journal of Housing and the Built Environment
- 2016 International Building Performance Simulation Association SimBuild
- 2016, 2018 National Science Foundation
- 2016 Puerto Rico Science and Technology Trust
- 2015 Building and Environment ad hoc
- 2015 Urban Climate *ad hoc*
- 2014-present US Green Building Council *Greenbuild Conference*
- 2012-2013 Congress of Tall Buildings and Urban Habitat

TEACHING

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- 2019 spring ARCH-3210 Environmental Systems. Northeastern. 35 students (supervised teaching assistants for 3 lab sections)
ARCH 5220 Integrated Building Systems: Northeastern. 48 students
 - 2018 fall ARCH-5210 Environmental Systems. Northeastern. 32 students (substantial redesign as graduate seminar)
SBSY-5100 Sustainable Design & Technologies in Construction. Northeastern: 25 students
 - 2018 spring ARCH-5210 Environmental Systems. Northeastern. 50 students (supervised teaching assistants for 4 lab sections)
ARCH 5120 Comprehensive Design Studio. Northeastern, 10 students In collaboration with CIVE 4767 Senior Design-Structural (co-coordinator for 7 sections of architecture studio)
 - 2017 fall ARCH-5210 Environmental Systems. Northeastern. 45 students (supervised teaching assistants for 4 lab sections)

- SBSY-5100 Sustainable Design & Technologies in Construction.
Northeastern: 20 students
- 2017 spring ARCH 5120 Comprehensive Design Studio. Northeastern, 12 students In collaboration with CIVE 4767 Senior Design-Structural (co-coordinator for 7 sections of architecture studio)
- 2016 fall ARCH-5210 Environmental Systems. Northeastern. 59 students (supervised teaching assistants for 5 lab sections)
- SBSY-5100 Sustainable Design & Technologies in Construction.
Northeastern: 20 students
- 2016 spring ARCH 5220 Integrated Building Systems: Northeastern 86 students
- ARCH 5120 Comprehensive Design Studio. Northeastern, 12 students (co-coordinator for 8 sections)
- 2015 spring ARCH 5120 Comprehensive Design Studio. Northeastern, 10 students (co-coordinator for 8 sections)
- 2014 fall ARCH-5210 Environmental Systems. Northeastern. 96 students (supervised teaching assistants for 6 lab sections)
- SBSY-5100 Sustainable Design & Technologies in Construction.
Northeastern: 16 students
- 2014 spring ARCH 5120 Comprehensive Design Studio. Northeastern, 12 students (co-coordinator for 6 sections)
- 2013 fall ARCH-5210 Environmental Systems. Northeastern. 44 students
- SBSY-5100 Sustainable Design & Technologies in Construction.
Northeastern: 19 students (+1 Auditing)
- 2008 spring ARCH-2360 Environmental and Ecological Systems. Rensselaer Polytechnic Institute: 63 students (Visiting Adjunct)

THESIS AND DISSERTATIONS SUPERVISED

- 2015-present **Lucas Troup**. PhD Interdisciplinary Engineering.
- 2018-2019 **Abigail Reed**. Undergraduate Honors. May 2019 “Microclimates of the Sixth Façade” awarded the ARCC King Research Prize.
- 2017-2018 **Timothy Adurelere** MS. Mechanical Engineering. “Passive Survivability in Residential Buildings During a Heat Wave Under Dynamic Exterior Conditions” December 2018.
- 2015 **A. Htet Htet Aung** Undergraduate Honors. “Building Construction Performance of Residential Wood Frames.” May 2016

DOCTORAL COMMITTEES

- 2016-present **Robert Phillips**. PhD Civil and Environmental Engineering
- 2017-present **Sahar Mirzaee**. PhD Public Policy

NEW COURSE DEVELOPMENT

- 2017 & 2018 **ARCH 5120** Comprehensive Design Studio + **CIVE 4767** Engineering Capstone integration
- 2014 **ARCH-5210** Environmental Systems (*major restructuring*)
- 2013 **SBSY-5100** Sustainable Design & Technologies in Construction.
- ARCH 2250** Introduction to Sustainable Design in Architecture
- ARCH 2260** Introduction to Building Systems (*offered fall 2015 & 2016*)

ALTERNATIVE INSTRUCTION

- 2019-2020 Engineers Without Borders. Advising Guatemala School project team.
- 2019 CIVE 4767 Senior Design. Architectural consultant for 7 teams of capstone teams designing building and non-building structures.
- 2016 *Case Resilienti* Advised engineering capstone students designing off-the-grid home in Italy.
- 2015-present Freedom by Design. Advised students in the design and construction of accessibility upgrades at Egleston Square Peace Park, & Bird Street Center
- 2014-2015, 2016-2017, 2017-2018 DOE Race to Zero Student Competition. Faculty Advisor for Northeastern Team developing net-zero home design.
- 2013-2014 NESEA Student Design Competition. Faculty Advisor for Northeastern Team designing low-energy retrofit to mill building

INVITED JUROR

- 2019 Kansas State University: Comprehensive Design Studio 4/8/2019
- 2018 Boston Architectural College: Comprehensive Design Studio 4/12/2018
- 2015 Harvard Graduate School of Design: Master of Design: 5/13/2015
- Boston Architectural College: Comprehensive Design Studio 10/8/2015, 12/3/2015
- 2013 Wentworth Institute of Technology: Comprehensive Design Studio 10/28/2013
- 2010 University of California at Berkeley: ARCH 140 Energy and Environment, Final Review 5/5/2010
- University of California at Berkeley: M-Arch Design Studio, Interim Reviews 4/19/2010
- University of California at Berkeley: ARCH 160 Construction Systems, project reviews. 3/19/2010
- 2009 Catholic University of America: Master of Architecture program 5/1/2009 4/17/2009
- 2008 IESNA East-Central Region Design Awards Judge. 3/1/2008

2007 Rensselaer Polytechnic Institute: Master of Science: Built Ecologies
Program: 8/28/2007

SERVICE

SERVICE TO THE UNIVERSITY

- 2018 Designed and Implemented the Architecture Maker space, including selecting, organizing, installing, and calibrating tools and equipment
- 2018 Faculty Search Committee: Assistant Director for the Center for Advancing Teaching Learning through Research (Office of the Provost)
- 2017-present Northeastern School of Architecture Executive Committee
- 2016-2017 Northeastern School of Architecture Architectural Studies Program Coordinator
- 2013-present Master of Science in Sustainable Building Systems (Ms.SBS) Program Committee and Faculty Advisor
- 2016 Faculty Search Committee: Director of the Center for Advancing Teaching Learning through Research (Office of the Provost)
- 2013 – present Northeastern School of Architecture American Institute of Architecture Students (AIAS) Chapter Advisor
- 2015-present Northeastern University Sustainable Building Organization (NUSBO) Faculty Advisor
- 2015-2017 Northeastern School of Architecture Curriculum Committee
- 2014 – 2016 Northeastern School of Architecture Faculty co-op liaison
- 2014, 2015 Northeastern School of Architecture Merit Committee
- 2013 – 2015 Northeastern School of Architecture Online Course Committee
- 2013 – 2018 Northeastern School of Architecture Architectural Studies Committee

SERVICE TO THE PROFESSION

- 2017-2018 7th International Building Physics Conference Scientific Committee
- 2017-2019 ASHRAE TC 7.1 Integrated Building Design Corresponding Member
- 2015-2018 Boston Society of Architects (Local AIA Chapter) Board

SERVICE TO THE PUBLIC

- 2018 Expert Contributor New York State Energy Research and Development Authority Climate Change & Buildings: Adaptation Research Planning Meeting, October 2, 2018
- 2015-2017 Massachusetts Engineers and Architects for Emergency Response (MEAER)
- 2017-Present Sacred Heart School Roslindale MA, Board of Trustees
- 2016 Strategic Planning Task Force