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2020 AIA Fellowship

Candidate Blaine E. Brownell
Organization University of Minnesota
Location Minneapolis, Minnesota
Chapter AIA Minnesota; AIA Minneapolis

Category of Nomination

Object 2 > Literature

Summary Statement

An architect dedicated to materials research and education, Blaine Brownell has deeply influenced architects' capacity to evaluate emerging materials and employ new material applications that are technologically, environmentally, and aesthetically innovative.

Education

Rice University, Houston, Texas, 3.5 years attended
Master of Architecture, 1998

Princeton University, Princeton, New Jersey, 4 years attended
Bachelor of Arts in Architecture + Certificate in East Asian Studies, 1992

Licensed in: Washington State

Employment

University of Minnesota School of Architecture, 2008-present (11 years)

University of Michigan College of Architecture and Urban Planning, 2007-2008 (1 year)

Tokyo University of Science Department of Architecture, 2006-2007 (1 year)

NBBJ, 1999-2006 (7 years)

Willis Bricker Cannady Architects, 1998-1999 (1.5 years)

Takenaka Corporation, 1997 (0.25 years)

Giattina Fisher & Aycock Architects, 1992-1994 (2 years)

Kajima Corporation, 1991 (0.25 years)

August 6, 2019



2020 AIA Fellowship Jury Members

Regarding: the nomination for Fellowship of Blaine Brownell, AIA

Jury Members:

Blaine Brownell has dedicated his teaching, research and writing to the complex and fast evolving world of architectural building materials. New material technologies are profoundly changing design, manufacturing and construction, and hold huge potential to influence critical economic, social, cultural and environmental challenges. Yet accessible knowledge about how to assess and adopt new material technologies and applications is exceedingly limited. The highly prolific and varied work of architect, researcher and teacher Blaine Brownell is an extraordinary exception.

His work with emerging materials has deepened the discipline's and profession's understanding of how new materials transform the functional capacity, design potential and environmental performance of buildings. For example, his highly acclaimed four volume *Transmaterial* series has sold nearly 39,000 copies and received international praise for comprehensively cataloguing innovative material strategies and expanding the very definition of "building material".

Blaine has also authored or co-authored three seminal books investigating the application of materials and innovative methods of making architecture: *Material Strategies: Innovative Applications in Architecture* (2012); *Matter in a Floating World: Conversations with Leading Japanese Architects* (2011); and *Hypernatural: Architecture's New Relationship to Nature* (2015). Since 2009 he has written over 670 online articles on material applications called *Mind & Matter* for *Architect* magazine.

The scope and influence of Blaine's work is vast as you will see in detail in this submission. In addition to selling 46,000 copies of books, he lectures widely and writes for widely varied popular and professional publications from *The Wall Street Journal* and *Nature* to *Metropolis* and *A + U*. While the quantity and quality of his writing and lecturing is truly remarkable, as importantly, I can personally attest to his integrity, warmth and graciousness. He is held in high regard in the professional community and among University faculty and students. The AIA will be honored and very well served to count him among its Fellows.

Thomas Meyer, FAIA

Founding Principal, MSR Design

1.0 Summary of Achievements

Blaine Brownell, AIA LEED AP

An architect dedicated to materials research and education, Blaine Brownell has deeply influenced architects' capacity to evaluate emerging materials and employ new material applications that are technologically, environmentally, and aesthetically innovative.

Throughout his career, Blaine has sought to elevate the quality and sophistication of material practices in the architectural profession. Significant works of architecture often incorporate innovative material practices—using new materials, inventing new uses for existing materials, or both. Yet knowledge about how to adopt such methods has been largely absent from the literature. Two decades ago, Blaine initiated an ongoing research effort that has resulted in a number of significant publications as well as related lectures, exhibitions, and courses focused on emerging materials and applications. Now interim head of the University of Minnesota School of Architecture, Blaine is developing a critical framework for assessing materials' technological and environmental effects to maximize opportunities for architectural innovation.

Emerging materials

New materials are anticipated to bring about unprecedented changes in design, manufacturing, and construction. So-called “advanced” and “disruptive” materials represent new possibilities for architecture, yet few architects know how to assess such materials. Blaine has contributed significant scholarship on emerging material technologies and trends to deepen our understanding of how new materials transform the functional capacity, design potential, and environmental performance of buildings. His four-volume *Transmaterial* series (2006, 2008, 2010, 2017) catalogs materials that have the most significant potential to redefine our physical environment. The four books have received broad critical acclaim, selling nearly 40,000 copies to date. The Royal Institute of British Architects nominated *Transmaterial* for an international book award in 2007, and the American Society of Landscape Architects selected *Transmaterial Next* as one of the Best Books of 2017. In the *Journal of Architectural Education*, Franca Trubiano described the work as “truly innovative... *Transmaterial* will be of interest to all involved in the design arts who seek a greater understanding of emerging materials and to all who are committed to expanding the traditional classifications of materials within the building industry.” (*JAE*, 2006)

Innovative applications

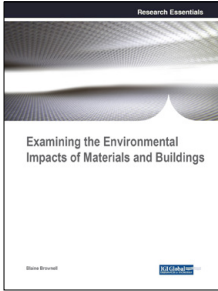
Another fundamental aspect of material knowledge concerns methods: how may materials be applied to achieve innovative outcomes in architecture? Blaine's has written several books on this topic, including *Material Strategies: Innovative Applications in Architecture* (2012), which evaluates the creative implementation of a variety of materials in significant architectural works. *Matter in the Floating World: Conversations with Leading Japanese Architects and Designers* (2011) encapsulates the material concepts, methods, and philosophies of some of today's most renowned Japanese practitioners including Tadao Ando, Toyo Ito, Kengo Kuma, and Kazuyo Sejima. *Hypernatural: Architecture's New Relationship with Nature* (2015), co-authored with Marc Swackhamer, explores the transforming connections between building materials and natural systems. Blaine also writes a regular column on innovative material applications called “Mind & Matter” for *Architect* magazine, the official publication of the AIA. Since 2009, he has written over 670 online articles for the magazine, some of which have received over 40,000 individual page views.

Influence

Blaine's work has had a significant quantitative and qualitative impact on the architectural profession and the broader public. To date, Blaine's seven books have sold over 50,000 copies and received 56 reviews in publications including *Nature*, *The Wall Street Journal*, *Smithsonian*, and *The Architect's Newspaper*. Blaine has contributed eight chapters to books on architecture and has written 110 print articles for publications including *The New York Times*, *The London Times*, *A+U*, and *Metropolis*. Blaine has been interviewed 69 times, cited over 230 times, and has given 125 invited lectures in 17 countries. As a result of his influence, Blaine has been invited to participate in many meaningful service activities for the profession, academy, and the broader public and private sectors. He was a founding member of the Advanced Materials Council and has been an advisor to the National Institute of Building Sciences, the U.S. Department of Homeland Security, Steelcase, 3M, Panasonic, and the Danish Architecture Center. Blaine has served as Materials + Products Chair for the Vision 2020 Sustainability Council and as a member of the Fulbright Academy of Science & Technology. He has been an editorial board member of the *Journal of Advanced and High-Performance Materials*, *Journal of Architectural Education*, and *Journal of Contemporary Architectural Education*. In his current role as a professor and administrator at the University of Minnesota School of Architecture, Blaine continues to champion material excellence in architecture at local, national, and international levels.

2.1 Significant Work

Books



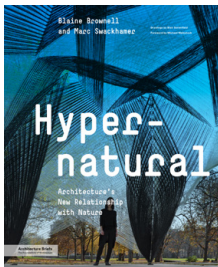
Examining the Environmental Impacts of Materials and Buildings. Hershey, PA: IGI Global, 2020 (forthcoming).

This book aims to collect and disseminate the latest scholarship regarding environmental performance measurement with a primary focus on material flows and embodied impacts within the built environment. The peer-reviewed publication is a platform for the development of new approaches for documenting and communicating the environmental effects of architectural materials.



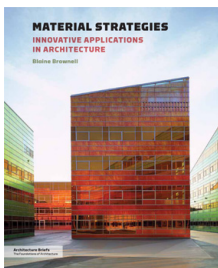
Transmaterial Next: A Catalog of Materials that Redefine Our Future. New York: Princeton Architectural Press, 2017.

Virtually every revolution in architecture has been preceded by a revolution in materials. *Transmaterial Next* reveals emerging trends and applications that are transforming the technological capacity, environmental performance, and design potential of architecture. This book is an essential compendium for thinking architects looking toward the bleeding edge of materials.



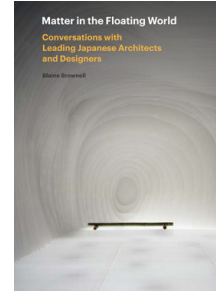
Hypernatural: Architecture's New Relationship with Nature. New York: Princeton Architectural Press, 2015 (with Marc Swackhamer).

By looking to nature as a teacher rather than merely as a resource, pioneers in the emerging biomimicry movement are developing design methods and materials to create intelligent buildings that emulate life itself. *Hypernatural* presents an international collection of forty-two case studies that illustrate astonishing new applications possible in this rapidly growing field.



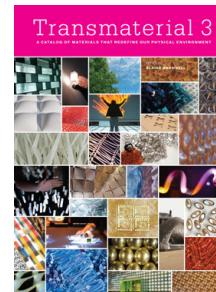
Material Strategies: Innovative Applications in Architecture. New York: Princeton Architectural Press, 2012.

In *Material Strategies*, Brownell shows architects how creative applications of materials achieve new possibilities in the built environment. The book examines historical precedents, current opportunities, and future environmental challenges. Case studies featuring detailed illustrations showcase pioneering buildings from today's most forward-thinking architectural firms.



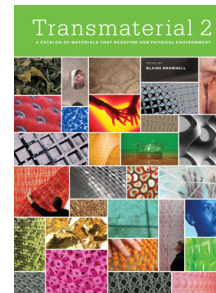
Matter in the Floating World: Conversations with Leading Japanese Architects and Designers. New York: Princeton Architectural Press, 2011.

Matter in the Floating World examines the material practices of twenty leading architectural and design innovators in Japan to find the connections between substance and transience in their work. Dialogues are organized into four thematic sections that embody various approaches to materiality and evanescence in Japanese architecture and design.



Transmaterial 3: A Catalog of Materials that Redefine Our Physical Environment. New York: Princeton Architectural Press, 2010.

The third volume in the critically acclaimed series presents over two hundred emergent materials, products, and systems that have significant potential to transform the constructed world. *Transmaterial 3* provides a broad synopsis of the state of technological advances in materials today with a particular emphasis on new developments in biopolymers and smart materials.



Transmaterial 2: A Catalog of Materials that Redefine Our Physical Environment. New York: Princeton Architectural Press, 2008.

A sequel to the critically acclaimed and best-selling book *Transmaterial*, *Transmaterial 2* is a clear, concise, accessible, and carefully edited resource that provides information about the latest and most intriguing materials commercially available. *Transmaterial 2* includes more than two hundred materials and is indexed in multiple ways for maximum convenience.

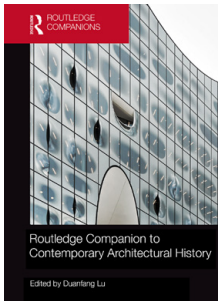


Transmaterial: A Catalog of Materials that Redefine Our Physical Environment. New York: Princeton Architectural Press, 2006.

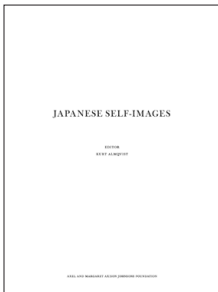
With more than 200 materials organized by category, described, pictured, and annotated with technical and sourcing information, *Transmaterial* is an essential tool for any architect or designer interested in keeping up with the rapid developments in the field of materials, looking for a source of inspiration for their designs, or just eager to understand the innovative palette now available to us.

2.1 Significant Work

Selected Book Chapters



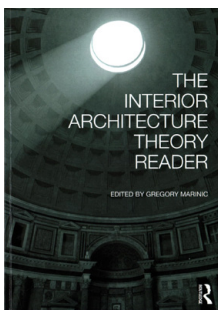
“Divergent Matter: The Manifold Material Nature of Contemporary Architecture.” Duanfang Lu, ed. *The Routledge Companion to Contemporary Architectural History*. Oxon, UK: Routledge Press, 2019 (forthcoming). This essay focuses on the ever-shifting conflict between the concept of material suitability and its resulting applications—a productive tension that exemplifies the troubled search for contemporary architectural expression.



“Evoking Ihyou: The Role of Surprise in Contemporary Japanese Architecture.” Kurt Almqvist, ed. *Japanese Self-Images*. Stockholm, Sweden: Axel and Margaret Ax:son Johnson Foundation, 2019 (forthcoming). This chapter addresses various aspects of surprise in the material applications of contemporary Japanese architects, with examples by Tadao Ando, Kengo Kuma, SANAA, and Junya Ishigami. Authors of other chapters include Kosaku Yoshino, Anne Imamura, Elisabet Yanagisawa, and Kristina Fridh.



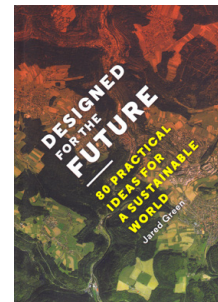
“Determining Architecture’s Footprint: Preliminary Methods for Measuring the True Environmental Impact of Buildings.” Gülsah Koç and Bryan Christiansen, eds. *Reusable and Sustainable Building Materials in Modern Architecture*. Hershey, PA: IGI Global, 2019. This peer-reviewed chapter argues for a new set of approaches to quantify and visualize the significance of building construction on the environment. Authors of other chapters include Caroline O’Donnell, Sheila Puffer, and David Wesley.



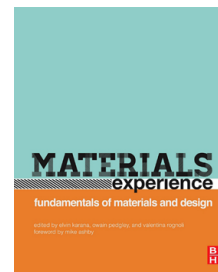
“Living Rooms: The Hypernaturalization of the Interior.” Gregory Marinic, ed. *The Interior Architecture Theory Reader*. Oxon, UK: Routledge Press, 2018. This chapter extends the central thesis of Hypernatural to interior architecture, assessing how indoor environments and materials may be intelligently linked to natural systems and processes. Authors of other chapters include Graeme Brooker, Nataly Gattegno, Frank Jacobus, Jason Johnson, Clare Olsen, and Michael Webb.



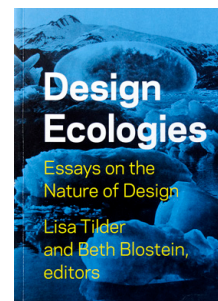
“Inventive Matter: Architecture for a Third Resource Regime.” David Benjamin, ed. *Embodied Energy and Design: Making Architecture Between Metrics and Narratives*. New York: Columbia University GSAPP and Lars Müller Publishers, 2017. This chapter analyzes the current global expansion, variation, and optimization of energy and material resources in the built environment. Authors of other chapters include Michelle Addington, Paola Antonelli, Jeanne Gang, and Sheila Kennedy.



“Biomimicry and Biodesign.” Jared Green, ed. *Designed for the Future: 80 Practical Ideas for a Sustainable World*. New York: Princeton Architectural Press, 2015. This contribution examines the creation of living systems, products, and technologies in architecture—such as algae-based curtain wall bioreactors. Authors of other essays include Janine Benyus, Barry Bergdoll, Tatiana Bilbao, Bjarke Ingels, Marion Weiss, and J. Meejin Yoon.



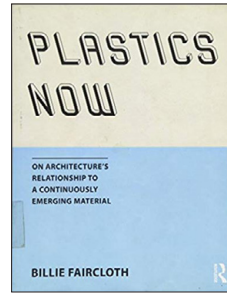
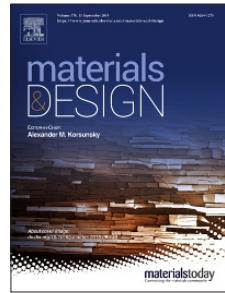
“Manipulating the Material Code.” Elvin Karana, Owain Pedgley, and Valentina Rognoli, eds. *Materials Experience*. Amsterdam: Elsevier B.V., 2013. This chapter considers methods employed by contemporary Japanese architects and designers who transform material meaning in products and environments via sophisticated approaches. The book was edited by material researchers at TU Delft, Middle East Technical University, and Politecnico di Milano.



“Material Ecologies in Architecture.” Lisa Tilder and Beth Blostein, eds. *Design Ecologies: Essays on the Nature of Design*. New York: Princeton Architectural Press, 2009. This chapter extends the current debate regarding the assessment, selection, and specification of environmentally responsible materials in a way that promotes critical design thinking. Authors of other chapters include Bruce Mau, David Gissen, Stephen Kieran and James Timberlake, R&Sie(n), and WORKac.

2.1 Significant Work

Selected Articles



"The Future's Building Blocks." *Metropolis* (March 2019).

"The Aesthetics of Green: Material Expression in Sustainable Architecture." *Techne Journal of Technology for Architecture and Environment* 16: Matter Is Design. Firenze University Press (2018).

"Organic Chemistry: Searching for a Natural Cure to the Plastic Plague." *Architecture Boston* Vol. 20 No. 4 (Winter 2017).

"The Re-emergence of Tangible Light." *Architectural Lighting* (April 5, 2017).

"Material Transformation." Gregory Marinic and Ziad Qureshi, eds. *International Journal of Interior Architecture + Spatial Design* (July 22, 2016).

"From Matter to X-Matter: Exploring the Newfound Capacities in Information-Enhanced Materials." *Materials and Design* 90 (2016).

"Nature 3.X: Where is Nature Now?" *Landscape Journal* Vol. 2, No. 34 (2015).

"Plastic Ambivalence." Billie Faircloth, ed. *Plastics Now: On Architecture's Relationship to a Continuously Changing Material*. Oxon, UK: Routledge (2015).

"Visible Green: New Material Opportunities in Sustainable Design." *EcoBuilding Review* (Winter 2014).

"Material Resilience in Two Dimensions." *Journal of the National Institute of Building Sciences*, Vol. 2, No. 2 (April 2014).

"Big Advances, Small Packages." *Architectural Lighting* (May-June 2013).

"Light as Material." Els Zijlstra and Philip Allin, eds. *Material Discoveries I*. Amsterdam: Materia bv (2013).

"Light in an Expanding Field: New Technologies Dissolve Disciplinary Boundaries." *Architectural Lighting* (December 2012).

"Tework Center." Matt Bua and Maximilian Goldfarb, eds. *Architectural Inventions: Visionary Drawing of Buildings*. London: Laurence King Publishing, (2012).

"Materials for the Carbohydrate Economy." *Danish Design Center* online (April 2012).

"Introduction." *Journal of Architectural Education*, Volume 65, Issue 2 (March 2012) (with Michelangelo Sabatino).

"An Uncertain Future." *The Times* (July 25, 2011).

"Peering into the Floating World." *Architectural Lighting* (June 2011).

"Driving the Future of Fabric Structures." *Specialty Fabrics Review* (June 2011).

"Plastic Culture." *Architect Spring Product Spec Guide* (Spring 2011).

"Emergent Materials for Security, Energy, and the Environment." *Journal of Advanced and High-Performance Materials* (Winter 2011).

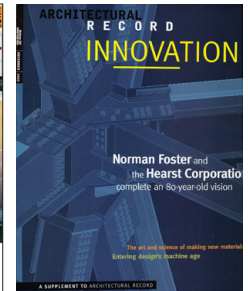
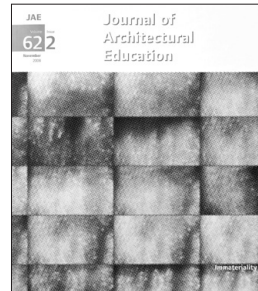
"Creating More with Less: Enhanced Functionality in Architectural Textiles." *Fabric Architecture* (November 2010).

"Multiple Choice." *Architect Building Science* (Fall 2010).

"Light Assimilation." *Architectural Lighting* (September/October 2010).

2.1 Significant Work

Selected Articles



"Light Matters: Luminous Materials and Technologies." *Architectural Lighting* (August 2010).

"Product Development 2.0." *Ambidextrous: Stanford University Institute of Design* (Spring 2010).

"At Play in the Product Sandbox." *Architect Building Science* (Spring 2010).

"The Age of Concrete." *The New York Times* (March 13, 2010).

"Testing Ground: Emergent Green Materials and Architectural Effects." *A+U* 473 (February 2010).

"Material Futures: Disruptive Applications in Architecture and Design." *Space Design* (December 2009).

"Infrastructure." Bulman, Luke and Jessica Young, eds. *Everything Must Move, Architecture at Rice 44*. Houston: Rice School of Architecture (2009).

"Assembling Light: PET Wall Installation." *Dimensions 22*, The University of Michigan College of Architecture and Urban Planning (Spring 2009).

"Landscapes of the Unknown: Kenya Hara's Design." *Ambidextrous: Stanford University Institute of Design* (Fall 2008).

"Tooling with Mother Nature." *Discover* (March 2009).

"Assembling Light." *Journal of Architectural Education*, Volume 62, Issue 2 (November 2008).

"Material Complexity in Architecture." *Materia* 58 (June 2008).

"Necessary Good." *Residential Architect* (September 2007).

Blaine Brownell, AIA LEED AP | AIA Fellow Application: Object Two - Literature

"Disappearing Act." *Ambidextrous: Stanford University Institute of Design* (March 2007).

"Facing My Own Ignorance." *Pop!Tech: Dangerous Ideas*. Camden, Maine, (October 2006).

"Material Issues." *Innovative Home* (November 2007).

"Research Matters." *Forward: The AIA/NAC Quarterly Journal* (October 2006).

"Safety in Layers." *Ambidextrous: Stanford University Institute of Design* (September 2006).

"Transforming the World with Innovative Design." *Sustainable Industries Journal* (August 2006).

"Material Things." *Event Design* (May/June 2006).

"Blaine Brownell—NBBJ." *A+U* No. 428 (May 2006).

"Liquid Architecture." *Ambidextrous: Stanford University Institute of Design* (May 2006).

"Headline from the Future." *Popular Science* (May 2006).

"The Leaders of the Latest Materials Revolution." *Architectural Record* (November 2005).

"Material Revolution." *Ambidextrous: Stanford University Institute of Design* (August 2005).

"Malzeme Devrimi (Materials Revolution)." *Art + Decor* (June 2005).

"Nuovi Materiali (New Materials)." *Casamica* (February 2005).

2.1 Significant Work

Selected Articles in *Architect*



"Technology: Robots and the Internet of Clean" (November 2017).

"Waste Is a Crime: Material Strategies for Sustainable Construction" (October 2017).

"Technology: Self-Illuminating Glass" (June 2017).

"T3 Starts the U.S. Tall Timber Race" (November 2016).

"Make Your Own Materials" (October 2015).

"One Word" (May 2015).

"Material Science: Five Technologies to Watch in 2015" (January 2015).

"Made in Germany by Robots" (December 2014).

"Naturally Smart Textiles" (August 2014).

"Detail: Landesgartenschau Exhibition Hall" (August 2014).

"Highways of the Sun" (June 2014).

"Star-Crossed Paths" (March 2014).

"Iron Man" (February 2014).

"Out of Thin Air" (January 2014).

"Paper or Plastic?" (December 2013).

"Natural Advantage" (November 2013).

"Print It!" (October 2013).

"Going Rogue" (September 2013).

"Stuck in the Past" (August 2013).

"Before Drawing Conclusions..." (July 2013).

"It's Only Natural" (June 2013).

"Super Paper" (May 2013).

"The Slowest Race" (April 2013).

"Bring in the Fungi" (March 2013).

"Healed Over" (February 2013).

"A Place in the Sun" (January 2013).

"Innovation via Reinvention" (December 2012).

"Virtual Design" (November 2012).

"Just Move It" (October 2012).

"Rio Strides in Green" (September 2012).

"In the Hothouse" (July 2012).

"Paving the Way" (June 2012).

"A Light Coat" (May 2012).

"Deconstruction, Reconstruction" (April 2012).

"Natural Lighting" (March 2012).

"Skinjobs" (February 2012).

"Running Dry" (January 2012).

"Bag the Bags" (December 2011).

"Bright Nights" (November 2011).

"Winds of Change" (October 2011).

"Two (More) Towers" (September 2011).

"The Life of Trees" (August 2011).

"Jailbreaking Cells." (July 2011).

"Disaster Design." (June 2011).

"Hardcore Plastic." (May 2011).

"Strong as Air." (April 2011).

"Strength in Mussels." (March 2011).

"Cooking Up Architecture." (February 2011).

2.1 Significant Work

Selected Professional Lectures



“Vital Matters: Demonstrating sustainable practices in material applications.” **Materials Matter: AIA Colorado**, Denver, 2019.

“Hypernatural: Architecture’s New Relationship with Nature.” **FAB Biennale: Mumbai**, India, 2018.

“Material Agency.” **Architect: Napa**, 2017.

“Mind & Matter,” **AIA Chicago**, 2017.

“Next-Gen Materials for the Built Environment,” **Buiding Design + Construction: Chicago**, 2017.

“Surprise in Contemporary Japanese Architecture.” **Ax:son Johnson Foundation: Stockholm**, 2016.

“The Circular Economy” panel with William McDonough. **Hive: Los Angeles**, 2016.

“Hypernatural: Architecture’s New Relationship with Nature.” **AIA Vision Cincinnati**, 2016.

“Hypernatural.” Lecture with Marc Swackhamer, **AIA Minnesota**, 2015.

“Material Agency.” **AIA Practice + Design**, Keystone, Colorado, 2015.

“Visible Green: New Material Opportunities in Sustainable Design.” **Greenbuild: New Orleans**, 2014.

“Hypernatural: Architecture’s New Relationship with Nature.” **Webinar: EcoBuilding Pulse**, October 2014.

“Hypernatural: Architecture’s New Relationship with Nature.” **ASODI: Guatemala City**, Guatemala, 2014.

“Material Strategies: Innovative Applications in Architecture.” **Innovation Lab: Copenhagen**, 2014.

“Transmateriality.” **Transmaterial Research Symposium: Melbourne**, Australia, 2013.

“Augmented Matter.” **Studio X: Beijing**, China, 2013.

“Light in an Expanding Field.” **Illuminating Engineering Society**, Minneapolis, 2012.

“Materials for the Carbohydrate Economy.” **Green Nation Festival: Rio de Janeiro**, Brazil, 2012.

“Innovative Concrete Technologies.” **National Building Museum**, Washington, DC, 2012.

“Materials for the Carbohydrate Economy.” **Danish Architecture Center: Copenhagen**, Denmark, 2012.

“Materials for the Carbohydrate Economy.” **Material Xperience: Rotterdam**, The Netherlands, 2012.

“Material Resilience.” **Advanced Materials Symposium**, Washington, DC, 2010.

“Re-calibrating Material Selection and Design.” Workshop, **Ecotech: São Paulo**, Brazil, 2010.

“Material Innovation.” **Architect magazine R+D Symposium: Chicago**, 2010.

“Material Futures.” **Oslo Association of Architects**, Norway, 2010.

“Material Futures for Sustainable Architecture and Infrastructure.” **Fulbright Academy of Science and Technology**, San Francisco, 2010.

“Emergent Materials for Security, Energy, and the Environment.” **National Institute of Building Sciences**, Washington, DC, 2009.

“Sustainable Material Futures in Architecture.” **Architectural Institute of Japan**, Tokyo, 2009.

“Building a Sustainable Infrastructure.” **U.S. Department of Homeland Security: Arlington**, 2008.

“Transmaterial.” **World Science Festival**, NY, 2008.

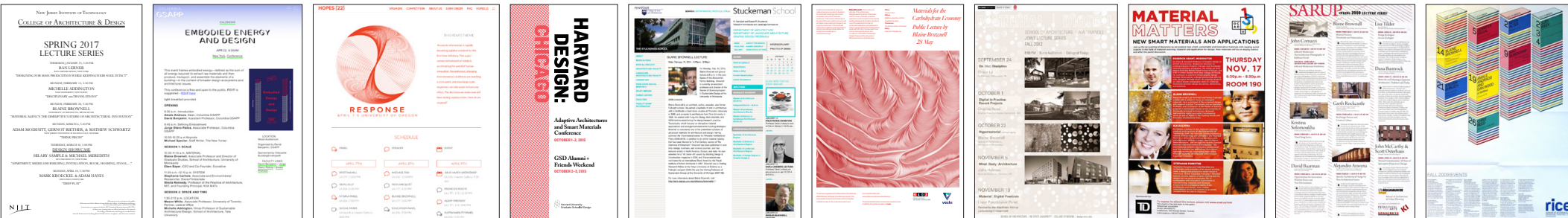
“Biomimicry and the Future of Materials.” **Arquinfad: Barcelona**, Spain, 2007.

“The Future of Sustainable Cities.” **Leading European Architects’ Forum: Rome**, Italy, 2007.

“Transmaterial.” **AIA Washington**, Seattle, 2006.

2.1 Significant Work

Selected Academic Lectures



“Power Windows: Innovative Energy Technologies for Buildings.” **University of Oxford**, UK, 2019.

“Parsing Materials: Our Unexplored Dialogue with Matter.” **Politecnico di Milano**, Italy, 2019.

“Hypernatural: Architecture’s New Relationship with Nature.” **University of South Carolina**, 2017.

“Material Agency.” **New Jersey Institute of Technology**, 2017.

“Inventive Matter: Future Resources in a Scavenger Economy.” **Columbia University GSAPP**, 2016.

“Hypernatural: Architecture’s New Relationship with Nature.” **University of Oregon**, 2016.

“X-Matter: The Convergence of Materials and Information.” **Harvard University GSD Smart Materials Conference**, Chicago, 2015.

“Hypernatural: Architecture’s New Relationship with Nature.” **Tongji University**, Shanghai, China, 2015.

“Visible Green: New Material Opportunities in Sustainable Design.” **Ohio State University**, 2015.

“Material Agency.” **University of Houston**, 2015.

“The Third Skin: The Building Envelope in Transformation.” **Tokyo University of Science**, 2014.

“Matter and Materiality in Japanese Architecture and Design.” **Penn State University**, 2014.

“Materials for the Carbohydrate Economy.” **Monash University**, Melbourne, Australia, 2013.

“Material Biomimicry.” **Tianjin University**, Tianjin, China, 2013.

“The Third Skin: The Building Envelope in Transformation.” **Kent State University**, 2013.

“Reassessing Material Meaning in the Built Environment.” **University of Tennessee**, 2012.

“Augmented Matter and the Network of Everything.” **North Carolina State University**, 2012.

“New Smart Materials and Applications.” **Ontario College of Art and Design**, Toronto, Canada, 2011.

“Material Evolution: Assessing Disruptive Change in Technology and Nature.” **Harvard University**, 2011.

“Beyond Flatland: Emergent Materials and the Next Interface.” **CIDAG Lisbon**, Portugal, 2010.

“Material Thresholds and Potentialities.” **Oslo School of Architecture and Design**, Norway, 2010.

“Material Futures.” **University of Wisconsin-Milwaukee**, 2010.

“Material Futures for Architecture and Design.” **University of Illinois**, 2009.

“Material Futures: Thresholds and Potentialities.” **Rice University**, 2009.

“Material Futures for Architecture and Design.” **University of Tokyo**, 2009.

“Sustainable Material Futures in Architecture.” **University of Maryland**, 2009.

“Material Futures for Sustainable Cities.” **Vienna University of Technology**, Austria, 2008.

“Material Futures in Architecture.” **Illinois Institute of Technology**, 2008.

“Material Futures in Architecture.” **UT Austin**, 2008.

“Assembling Light.” **University of Michigan**, 2008.

“Material Futures in Architecture.” **Washington University in St. Louis**, 2008.

“Material Futures in Architecture.” **Syracuse University**, 2008.

“Material Futures in Architecture.” **University of Virginia**, 2006.

“Transmaterial.” **Cornell University**, 2005.

2.1 Significant Work

Selected Leadership and Service

Administrative Roles

University of Minnesota School of Architecture

Interim Department Head, 2019–present

Director of Graduate Studies, 2014–2019

Interim Director, M.S. in Architecture–Sustainable Design Program, 2017–2019

Co-Director, M.S. in Architecture–Sustainable Design Program, 2010–2014

Selected Service

Professional affiliations

AIA Minnesota Board of Directors, Member: 2019–present.

Embodied Carbon Network, Carbon Leadership Forum, University of Washington, Seattle, Washington. Member: 2019–present.

Hanley Wood Vision 2020 Sustainability Council, Washington, DC.
Materials + Products Chair: 2014.

Advanced Materials Council, National Institute of Building Sciences, Washington, DC. Founding Member: 2009–present.

Fulbright Academy of Science & Technology (FAST), Member: 2010.

LightFair 2010 Conference Advisory Committee. Member: 2010.

AIA Seattle: Awards Ceremony Planning Committee. Member: 2006.

Journals

Journal of Contemporary Architectural Education (CAE), Tianjin University School of Architecture, Tianjin, China. Editorial Board Member: 2019–present.

Journal of Advanced and High-Performance Materials for the Building and Infrastructure Community (JMAT), National Institute of Building Sciences, Washington, DC. Editorial Board Member: 2009–present.

Journal of Architectural Education (JAE), Association of Collegiate Schools of Architecture (ACSA). Editorial Board Member: 2010–2013; Design Review Committee Member: 2011–2013.

Consulting

Science and Technology Directorate, Department of Homeland Security, Washington, DC, 2008–present.

Mayo Clinic, Rochester, Minnesota, 2018.

Danish Architecture Center, Copenhagen, Denmark, 2012.

National Museum of Emerging Science and Innovation, Tokyo, Japan, 2011.

Panasonic Corporation, Tokyo, Japan, 2010.

3M, Saint Paul, Minnesota, 2009–2011.

Publication Review

University of Bristol, Taylor & Francis, Bloomsbury Publishing, Kirshner Books, Island Press, Princeton Architectural Press, *MIT Technology Review*, *Journal of Urban History*, Association of Collegiate Schools of Architecture (ACSA)

Professional Juries

American Institute of Architects: AIA Architect of Distinction Award, AIA Emerging Talent Award, AIA 25 Year Award

John D. and Catherine T. MacArthur Foundation, SRA International, HATCH AVL, *Architect R+D Award*, *Architectural Record* Products

Academic Juries

Politecnico di Milano, Washington University in St. Louis, Catholic University of America School of Architecture, Tokyo University of Science, University of Michigan, University of Minnesota

Leadership Development

Big Ten Academic Alliance, Academic Leadership Program (ALP); University of Minnesota Executive Team Leadership Program; UMN College LEADS program

2.1 Significant Work

Selected Academic Experience

Academic Appointments

University of Minnesota School of Architecture

Full Professor with Tenure, 2019–present

Associate Professor with Tenure, 2013–2019

Assistant Professor, 2008–2013

University of Michigan College of Architecture + Urban Planning

Visiting Professor in Sustainable Design, 2007–2008

Courses Taught

Lecture

ARCH 3511—Material Transformations: Technology and Change in the Built Environment. Undergraduate lecture course (3 credits). Taught four times: 2012 (32 students), 2014 (28), 2016 (50), 2018 (72) = 182 students.

Design Studios

ARCH 432—Undergraduate Design Studio III. Undergraduate design studio (6 credits). Taught once (U. Michigan): 2007 (12 students).

ARCH 442—Undergraduate Design Studio IV (6 credits). Taught once (U. Michigan): 2008 (14 students).

ARCH 5110—Architecture as Catalyst. Graduate design workshop (1 credit). Taught 8 times: 2009 (20 students), 2010 (20), 2011 (20), 2012 (20), 2013 (14), 2014 (13), 2016 (11), 2017 (10) = 128 students.

ARCH 5250—Topics in Design: Supernatural/Generative Matter. Graduate design studio (4 credits). Taught 4 times: 2015 (13 students), 2016 (15), 2017 (13), 2018 (13) = 54 students.

ARCH 8251—Graduate Architectural Design I. Graduate design studio (9 credits). Taught 3 times: 2008 (12 students), 2009 (12), 2010 (12) = 36 students.

ARCH 8255—Graduate Architectural Design III. Graduate design studio (6 credits). Taught 5 times: 2011 (10 students), 2014 (13), 2015 (11), 2016 (12), 2018 (24) = 70 students.

Seminars

ARCH 507—Matter in the Floating World. Graduate seminar on Japanese architecture (3 credits). Taught once (U. Michigan): 2007 (16 students).

ARCH 5541—Material Strategies. Graduate seminar (3 credits). Taught 4 times: 2009 (12 students), 2010 (12), 2011 (14), 2013 (14) = 52 students.

ARCH 8565—Material Performance in Sustainable Building. Graduate seminar, required MS-SD course (3 credits). Taught 7 times: 2009 (20 students), 2010 (16), 2011 (16), 2012 (15), 2013 (16), 2018 (14), 2019 (17) = 114 students.

Study Abroad

ARCH 4150/5550—Study Abroad in Japan. Undergraduate and graduate global studio (3 credits). Taught 7 times: 2008 (U. Michigan, 12 students), 2009 (16), 2012 (15), 2013 (7), 2014 (15), 2016 (15), 2018 (16) = 96 students.

ARCH 4150/5550—Study Abroad in China. Undergraduate and graduate global studio (3 credits). Taught 3 times: 2015 (7 students), 2017 (8), 2018 (8) = 23 students.

Independent Study

ARCH 5993: Directed Study. Graduate elective course (1-3 credits). Taught 10 years: 2008 (1 student), 2010 (11), 2012 (1), 2013 (1), 2014 (1), 2015 (2), 2016 (3), 2017 (7), 2018 (4), 2019 (4) = 35 students.

Committee Advising

ARCH 8777—M.S. Thesis/Project. Graduate independent work (10 credits). Taught 8 years: 2009 (1 student), 2010 (1), 2011 (2), 2013 (5), 2014 (1), 2015 (1), 2018 (3), 2019 (9) = 22 students.

ARCH 8299—M.Arch Thesis. Graduate design studio (10 credits). Taught 4 years: 2009 (3 students), 2010 (4), 2011 (3), 2014 (3) = 13 students.

Other—Interior Design PhD, Computer Science PhD, MLA. Taught 7 years: 2009 (1), 2012 (2), 2013 (3), 2014 (2), 2015 (1), 2017 (1), 2018 (1) = 11 students.

International workshops—Tianjin University, Tokyo University of Science. Taught 2 years: 2010 (20), 2013 (20) = 40 students.

Students Taught

2007–present: 918

Of these, students taught in small-format (20 or fewer) classes: 736

2.2 Significant Awards

Selected Awards, Honors, and Recognition

Publications

Best Books of 2017

The American Society of Landscape Architects, Washington, DC. (*Transmaterial Next* selected as one of the top ten books on the environment, cities, and landscape for 2017.)

Key Scientific Article, 2016

Advances in Engineering, Ottawa, Ontario, Canada. (Award to “From Matter to X-Matter” article in *Materials and Design* for contributing to excellence in engineering, scientific, and industrial research.)

International Book Award Nomination, 2007

Royal Institute of British Architects, London, UK. (Award nomination for *Transmaterial: A Catalog of Materials That Redefine Our Physical Environment*.)

Academic Fellowships

Visiting Fellow, 2007–2008

Taubman College of Architecture + Urban Planning, University of Michigan, Ann Arbor, Michigan. (Awarded one-year position to teach sustainable design in the undergraduate and graduate programs.)

Fulbright Fellowship, 2006–2007

Tokyo University of Science, Noda, Japan. (Awarded one-year research position to develop a book on innovative material approaches of contemporary Japanese architects and designers.)

Industry

NCARB Award Honorable Mention, 2012

National Council of Architectural Registration Boards, Washington, DC. (Proposal for Master of Science in Architecture—Research Practices program, with Renee Cheng, Laura Lee, and Jim Lutz.)

40 Under 40 Award, 2006

Building Design & Construction magazine. (Selected as one of “the 40 brightest stars in the AEC universe” for BD+C’s inaugural class of “40 Under 40” award recipients.)

University of Minnesota

Equity and Diversity Award Nomination, 2017

University of Minnesota College of Design. (Nomination for Outstanding Contributions to Equity and Diversity as Director of Graduate Studies in the School of Architecture.)

Research Award Nomination, 2016

University of Minnesota College of Design. (Nomination for Outstanding Research Award for contributions as Associate Professor in the School of Architecture.)

Selected Grants and Funded Research

Imagine Fund Awards for studying material applications in Japan, South Korea, China, Italy, Germany, Kazakhstan, and the UK (PI), **The McKnight Arts and Humanities Endowment**, University of Minnesota, 2009-2018, \$44,000.

“Biologically Motivated” Interdisciplinary Graduate Group symposium (Co-PI), **The University of Minnesota Graduate School**, 2015, \$10,200.

“Predicting Color Appearance Matches” (Co-PI with Gary Meyer), **Grant-in-Aid of Research, Artistry, & Scholarship**, University of Minnesota, 2014, \$45,154.

“Integrating Sustainable Design Research, Outreach, and Education” (Co-PI with Rich Strong), **Research and Outreach Grant**, University of Minnesota, 2012, \$25,000.

“Intern Development Program” (PI with Renee Cheng, Jim Lutz), **College of Design Initiative Award**, University of Minnesota, 2012, \$7,500.

“MS Program in Sustainable Design” (PI with Jim Lutz), **College of Design Initiative Award**, University of Minnesota, 2012, \$7,500.

“Mapping Innovation” to chronicle masonry technologies over time (PI), **Minnesota Masonry Industry Endowment**, 2011, \$7,614.

“Solar Daylighting Project” (RA with John Carmody), **Initiative for Renewable Energy and the Environment**, 2010, \$25,000.

“Recaptured/Smart Proxy” recycled plastic and biocomposite material development (PI), **Panasonic Corporation**, Tokyo, Japan, 2010, \$32,000.

2.3 Media

Selected Reviews of Blaine Brownell's Books

"A Minnesota architect illuminates the future of built environments," **Big Ten Network** (August 24, 2018).

"Best Books of 2017," **American Society of Landscape Architects** (November 29, 2017).

"Transmaterial Next: A Catalog of Materials That Redefine Our Future, by Blaine Brownell," **Times Higher Education** (July 27, 2017).

"The Next Generation of Materials," **Architect** (May 15, 2017).

"Books in Brief," **Nature** Vol. 545 (May 4, 2017).

"These Innovative Materials Will Redefine Our Future," **Metropolis** (May 2, 2017).

"Hypnatural: Architecture's New Relationship with Nature," **Oculus** Volume 77, Issue 4 (Winter 2015).

"Not Born This Way," **The Architect's Newspaper** (November 5, 2015).

"Hypnatural: Architecture's New Relationship with Nature," **American Library Association Choice** (September 2015).

"6 Books for Art Lovers," **Azure** (August 14, 2015).

"Hypnatural: Architecture Evolves," **The Dirt** (July 21, 2015).

"How Science is Radically Changing Building," **The Building Centre** (May 29, 2015).

"Book: Hypnatural: Architecture's New Relationship With Nature," **Seasons** (May 21, 2015).

"When a cow is an architect's best friend," **The Boston Globe** (April 29, 2015).

"Architects around the world look to nature to create our residential and commercial buildings today and in the future," **Cleveland Plain Dealer** (April 12, 2015).

"Architectural Design Inspired by Nature," **The Wall Street Journal** (April 10, 2015).

"Hypnatural: Brave. New. Designs," **Architects + Artisans** (March 26, 2015).

"Hypnatural: Architecture's New Relationship with Nature," **Interior Design** (March 15, 2015).

"Transmaterial: The Future of Our Built Environment," **Serious Wonder** (May 16, 2014).

"Material Strategies in Concrete," **Architectural Products** (June 2012).

"Book Briefs #9: Architecture Briefs," **A Daily Dose of Architecture** (May 25, 2012).

"Blaine Brownell on Innovative Materials Applications in Architecture," **Building Design + Construction** (April 19, 2012).

"Beyond Brutalism: Five Examples of Wildly Innovative Concrete Architecture," **Fast Company** (March 9, 2012).

"Material Strategies: Innovative Applications in Architecture," **Spacing Vancouver** (February 14, 2012).

"Build Book Report," **BUILDblog** (February 10, 2012).

"Material Strategies: An Ode to the Chalky and Blocky, Glassy and Brassy," **Surface** (January 10, 2012).

"Matter in the Floating World," **Architect** (May 2011).

"Matter in the Floating World," **Spoon & Tamago** (April 18, 2011).

"This Week's Beautiful Book... Matter in the Floating World," **Life.Style.etc.** (April 18, 2011).

"Matter in the Floating World/Blaine Brownell," **ArchDaily** (April 13, 2011).

"Matter in the Floating World," **A Weekly Dose of Architecture** (March 28, 2011).

"Book Review: Matter in the Floating World," **The Curated Object** (March 8, 2011).

"Matter in the Floating World," **Designer** (March 1, 2011).

"Transmaterial 3: Blaine Brownell," **Cleveland Design City** (February 10, 2010).

Aart van Bezooen, "This Just Inbox: Transmaterial 3," **Core77** (February 5, 2010).

"Read All About It: Transmaterial 2," **Construction Today** (January 26, 2009)

"New Books: Transmaterial 2," **Engineering News Record** (September 3, 2008).

"Inventory of New Materials: Transmaterial," Kevin Kelly's **Cool Tools** (November 2, 2006).

"Review: Transmaterial," **Journal of Architectural Education** (November 2006).

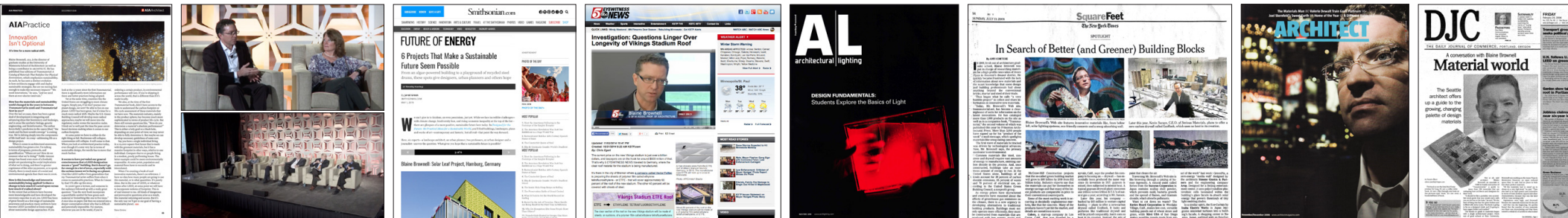
"Review: Transmaterial," **Architectural Record** (June 2006).

"Crit/Books: Transmaterial." **I.D.** (May 2006).

"Living in a Material World," **New Scientist** (February 4, 2006), 53.

2.3 Media

Selected Interviews with Blaine Brownell



"When a Building Comes Down, Where Do Its Materials Go?" **Metropolis** (January 30, 2019).

"Innovation Isn't Optional," **AIA Practice: Architect** (December 2018).

"Nachhaltig schön," **Finstral F02** (August 30, 2018).

"The future for ice architecture," **ABC Radio National Melbourne**, Australia (August 22, 2018).

"Unusual Milwaukee office building to use timber, not concrete or steel, for frame," **Milwaukee Journal Sentinel** (July 20, 2018).

"Perspective," **Green Operations** (Spring 2017).

"The Next Big Thing Isn't a Gadget," **Builder** (August 8, 2016).

"6 Projects That Make a Sustainable Future Seem Possible," **Smithsonian** (May 1, 2015).

"Game-Changing Ideas for a Sustainable World," **Dwell** (April 22, 2015).

"Episode 6: Live from Day Two of NCBDS 31," **The Architect Education Podcast** (March 1, 2015).

"Questions Linger Over Longevity of Vikings Stadium Roof," **ABC/KSTP News** (November 2, 2014).

"Transmaterial: The Future of Our Built Environment," **Serious Wonder** (May 16, 2014).

"Why Sustainability Needs Experimentation and a Bit More Risk," **EcoBuilding Pulse** (April 21, 2014).

"Elements: Material Matters," **Form** (Sept. 3, 2013).

"Guest Editor: Blaine Brownell," **Green Building and Design** (July/August/September 2012).

"BIPVs Ready for the Big Time," **LEAF Review** (2012).

"Just Reward for Bridging the Gap," **South China Morning Post** (May 13, 2012).

"Houses of the Rising Sun," **Sublime** (Nov. 2011).

"Material Developments: New Technologies and Their Implications for Building Construction," **Owners Perspective** (Fall 2011).

"Conversations on Material," **Stylus** (April 14, 2011).

"The Catalyst: Architecture Students Experiment with Light and Material," **Architectural Lighting** (November/December 2010).

"New Materials for Infrastructure Projects," **The Infrastructure Show** (Chicago: November 23, 2010).

"Der Stoff, aus dem die Zukunft ist (From Material, the Future is Born)," **Page** (June 2010).

"The Colour of Today—An Interview on Material Behaviour," **3XN: Mind Your Behaviour** (Copenhagen: The Danish Architecture Center, 2010).

"Blaine Brownell/Transstudio," **1000 Ideas by 100 Architects** (Beverly, Massachusetts: Rockport Publishers, 2010).

"In Search of Better (and Greener) Building Blocks," **The New York Times** (July 13, 2008).

"Science on a World Stage," **Chemical Engineering Progress**, Vol. 104 No. 7 (July 2008).

"Material Cultures," **Dwell** (February 2008).

"Material Witness," **Architect** (November 2006).

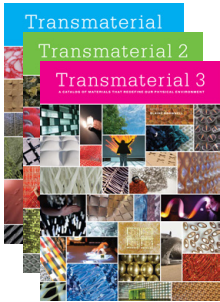
"Pop!Stars 2006," **Fast Company** (November 2006).

"40 Under 40," **Building Design & Construction** (March 1, 2006).

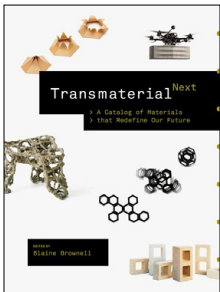
"The Revolution in Building Materials," **Businessweek** (February 28, 2006).

"A Conversation with Blaine Brownell," **Portland Daily Journal of Commerce** (February 24, 2006).

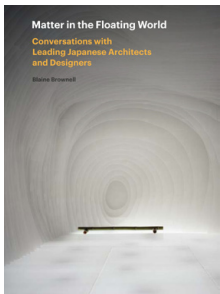
Exhibit List



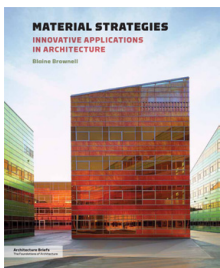
Transmaterial:
A Catalog of Materials that Redefine Our Physical Environment (1, 2, 3)



Transmaterial Next:
A Catalog of Materials that Redefine Our Future



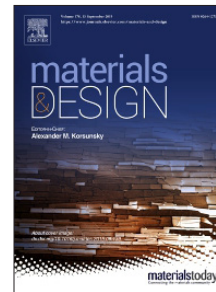
Matter in the Floating World:
Conversations with Leading Japanese Architects and Designers



Material Strategies:
Innovative Applications in Architecture



Hypernatural:
Architecture's New Relationship with Nature



From Matter to X-Matter:
Exploring the Newfound Capacities in Information-Enhanced Materials
Materials and Design



Inventive Matter:
Architecture for a Third Resource Regime
Embodied Energy and Design



Mind and Matter
Architect

3.1 Exhibits

Transmaterial (1, 2, 3)

Publisher

Princeton Architectural Press

Role

Editor

Publication

2006, 2008, 2010

Challenge

The impetus for the *Transmaterial* series came from experience selecting materials in architectural practice. Blaine recognized the disparity between the perceived importance of material innovation and the lack of practical knowledge and resources needed to accomplish this goal. He felt compelled to provide an alternative to the purely commerce-driven literature populating office and school resource libraries—what Christoph Grunenberg calls “the anesthetizing stream of bland, monocultural products”—by presenting only materials with significant potential to enable innovative design outcomes.

Strategy

Transmaterial delivers critical information about new materials to architects and designers who seek to transform the structure, spaces, and surfaces of their projects with the latest high-tech and environmentally friendly products. Each volume in the critically acclaimed series presents approximately two hundred emergent materials, products, and systems that have significant potential to transform the constructed world. The *Transmaterial* series provides a broad synopsis of the state of technological advances in contemporary materials such as smart materials, renewable energy technologies, and repurposed waste.

Impact

The *Transmaterial* series has been received positively by both academic and practicing architectural communities. The first book was the recipient of an international book award nomination by the Royal Institute of British Architects in 2007 and sold over 20,000 copies in its first four years—necessitating a reprint and prompting the publication of the second and third volumes. Together, *Transmaterial 1, 2, and 3* have been reviewed in over 25 journals and have sold nearly 38,000 copies.



Declaration of Responsibility

I have personal knowledge of the nominee's responsibility for the exhibit listed above. That responsibility included:

- project under direction of the nominee

Jennifer Lippert

Executive Editor, Princeton Architectural Press

3.1 Exhibits

Transmaterial (1, 2, 3)

Award

International Book Award Nomination, 2007,
Royal Institute of British Architects, London, UK
(*Transmaterial*).

Copies Sold

37,823

Selected Reviews

"Truly innovative... *Transmaterial* will be of interest to all involved in the design arts who seek a greater understanding of emerging materials and to all who are committed to expanding the traditional classifications of materials within the building industry."—***Journal of Architectural Education***

"From fully recyclable architectural resin panels to self-cleaning glass, Blaine Brownell has pretty much seen it all when it comes to sustainable building materials."—***Building Design & Construction***

"(*Transmaterial*) identifies products that make a difference—aesthetically, environmentally, socially, and, yes, structurally."—***Architect***

"From concrete that absorbs carbon dioxide to scratch-and-sniff wallpaper, the innovations compiled in this book are transformative, multi-functional and ultra-performing... The pages that fill *Transmaterial* cover 10 categories in the conversational yet informative tone of a material fanatic."—***Azure***

"Show(s) potential for replacing some standard materials by providing better performance while not harming the planet as much."
—***Engineering News Record***

"Its exciting because it absolutely is the right idea."
—***The Bulletin***

"An illustrated compendium of environmentally friendly materials."—***The Kansas City Star***

"Avoids obsolescence by structuring itself around categories configured to provide architects some breathing room in the under-appreciated realm of new materials... *Transmaterial* is useful as a materials book for the architect who would never think of leaving such matters to a consultant, but instead would rather dive into the research directly."
—***Architectural Record***

"The definitive compilation for discovering the materials that are reshaping our world. A must-have for designers of all walks... From concrete to mineral, metal to wood, plastic to glass, our material futures are bound to be lighter and brighter, thanks to this book."—***Res***

"Fulbright-winning architect Blaine Brownell brings the material world to the virtual, blogging about innovative building materials at Transstudio.com. His book... is a catalog and exploration of some 200 global eco-techno hybrids, an emerging field that has the attention of designers and scientists alike."
—***Fast Company***

"Through his research, his writing, and his design, architect Blaine Brownell is changing the profession's awareness of building products and materials."—***Architectural Lighting***

"Colorful and stimulating, and you don't have to be an architect or even a home improvement enthusiast to appreciate it... There is endless inspiration here."
—***New Scientist***

"This is a treasure for material enthusiasts."
—***International Design***

"The book is not the kind that'll stay pristine for long. It's not a coffee table book. It's not a flip-through-and-look-through-the-pictures-type book. It's not even a bookshelf kind of book. (The author) says 'It should be like a portable, very accessible travel guide that you would carry with you... This book is going to be on a designer's desk, and it's going to have pages folded and marked.'"—***Daily Journal of Commerce***

"If you think you've seen it all when it comes to concrete construction, then you haven't sat down with Blaine Brownell."—***Building Design & Construction***

"The third volume of the *Transmaterial* series features over 200 emergent materials, products, and systems that have significant potential to transform the constructed world. Within the fast moving world of materials, we consider *Transmaterial 3* a good way for architects and designers to keep up with the current trends in the field of materials."—***Core77***

"This catalog is an essential tool for any architect or designer interested in keeping up with the rapid developments in the field of materials, looking for a source of inspiration of their designs, or just eager to get their hands on real materials in an effort to understand the incredibly innovative palette now available to us."—***MAC International***

"*Transmaterial 3* just came out! If you are not familiar with this series, you should definitely pick one up. A great resource and inspirational guide to all kinds of innovative materials, techniques and applications."
—***Because We Can***

3.1 Exhibits

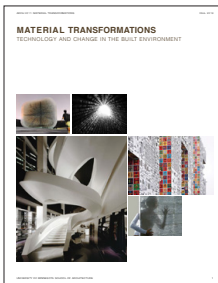
Transmaterial (1, 2, 3)—Related Efforts



Website. The website www.transmaterial.net and weekly email newsletter have functioned as a living catalog of emergent materials and technologies for architecture and design. Blaine's ongoing contributions to this freely accessible platform inspired Architalx director Jeanne Paterak to declare the resource “The 21st Century Grammar of Ornament.” According to Google Analytics, the website has received over 80,000 visits annually.



Lectures. The publication of the *Transmaterial* series resulted in many **invitations to speak** to professional and academic audiences. Blaine gave lectures related to the books at venues such as Pop!Tech, the World Science Festival, Architalx, the Danish Architecture Center, the National Building Museum, Arquinfad Barcelona, the Architectural Institute of Japan, the Oslo Architectural Association, the Council on Tall Buildings and Urban Habitat, and AIA Colorado, Minnesota, and Washington.



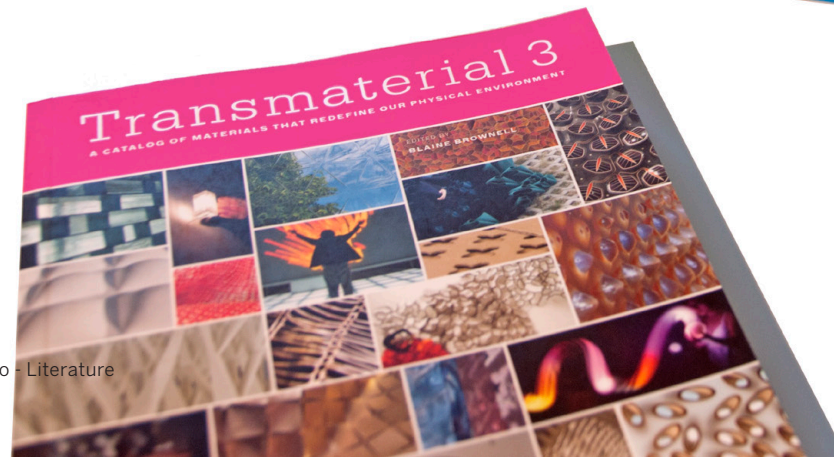
Survey Course. In 2013, Blaine developed an undergraduate architecture lecture course at the University of Minnesota, entitled **ARCH 3511: Material Transformations**, that received “super approval” status in the Provost's office. Unlike typical history, technology, or design courses, ARCH 3511 focuses on change—rather than stasis—within the built environment. Students model praxis via team-based design projects and research via ongoing analysis and writing assignments.



Symposium. In 2013, John Sadar and Tim Schork, professors at the **University of Monash Department of Architecture in Melbourne, Australia**, produced and hosted the “Transmaterial Research Symposium.” Invited speakers included Philippe Block, Paul Nicholas, Chris Hutchinson, and Peter Lim. Blaine gave a keynote lecture entitled “Transmateriality” that summarized his methods researching, curating, and writing the book series.



Exhibition. In 2015, Alicia Marván, Gallery Manager at the **University of Buffalo Department of Art**, curated and produced an exhibition entitled “Transmaterial: Material explorations in art, design and architecture” based on the three *Transmaterial* books. The installation consisted of innovative products selected from the series, and local artists, architects, and designers were invited to create new works for the exhibition using these materials.



3.2 Exhibits

Transmaterial Next

Publisher

Princeton Architectural Press

Role

Editor

Publication

2017

Challenge

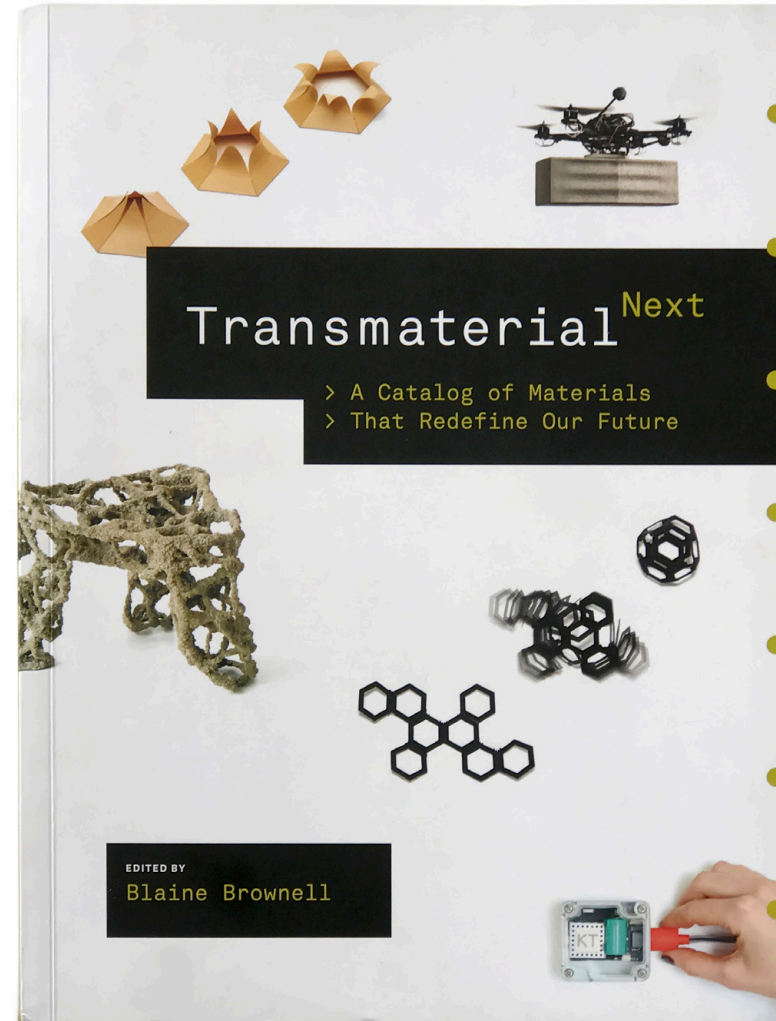
Today, a global material revolution is now in full swing, propelled by intensified material research and development efforts as well as a keen cultural interest in creative material expression. New materials have come to shape nearly all industrial sectors, influencing building codes, environmental rating systems, and industry guidelines used in design and engineering offices. The quantity and pace of change in material-based industries are unprecedented, and this change will bring new opportunities and challenges.

Strategy

Given the critical role that material choices play in affecting the flows of resources, waste, and emissions, the design and manufacturing industries have realized the importance of developing more extensive material expertise to provide enhanced leadership regarding the design of the future physical environment. *Transmaterial Next: A Catalog of Materials that Redefine Our Future* assesses the new wave of transformative materials based on the characteristics of advanced materials established by the Versailles Project on Advanced Materials and Standards (VAMAS) and disruptive technologies by business scholar Clayton Christensen.

Impact

Transmaterial Next provides a cross-sectional assessment of critical trends shaping multiple material categories and industries to provide readers with adequate foresight to make essential material decisions. The book elicited favorable reviews in *Nature*, *Times Higher Education*, *Architect*, *Metropolis*, and *Big Ten Network*, and was selected as one of the Best Books of 2017 by the American Society of Landscape Architects.



Declaration of Responsibility

I have personal knowledge of the nominee's responsibility for the exhibit listed above. That responsibility included:

- project under direction of the nominee

Jennifer Lippert

Executive Editor, Princeton Architectural Press

3.2 Exhibits

Transmaterial Next

Award

Best Books of 2017, American Society of Landscape Architects

Copies Sold

1,595

Selected Citations

Design for Health, Smart Structures and Integrated Systems, Applied Mechanics and Materials, Science of Emotion and Sensibility

Selected Reviews

"Sustainable materials must satisfy multiple cross-cutting criteria, from low or no environmental impact to design applicability and high performance. Those that made the cut in architect Blaine Brownell's eye-popping catalogue possess that magical mix of green credibility and sleek aesthetic... A foretaste of how near-future science could transform engineering and design."—**Nature**

"*Transmaterial Next* is rich with interesting details and well-organized... More than 100 brief case studies on materials offer brief summaries, images, the state of commercial readiness, and future possible impacts."—**The Dirt (American Society of Landscape Architects)**

"Materials science is serious business these days. Advanced materials underpin the world's booming technology industries, and might well determine the sustainable future of the planet. So labs these days operate under high pressure to find the next big thing. *Transmaterial Next*, the latest in Brownell's successful series on materials of the future, catalogues these innovations under ten categories: concrete, mineral, metal, wood and biomaterials, plastic and rubber, glass, paint and coatings, fabric, light, and digital."—**Metropolis**

"You may look to *Transmaterial Next* as a sourcebook of new professional opportunities. I was simply struck by the breathtaking variety of the materials that now surround us and the boundless ingenuity and inventiveness of those whose work is to create and exploit them."—**Times Higher Ed**

"The book serves as a sort of grand showcase of what could be."—**Big Ten Network**



3.3 Exhibits

Matter in the Floating World

Publisher

Princeton Architectural Press

Role

Author

Publication

2011

Challenge

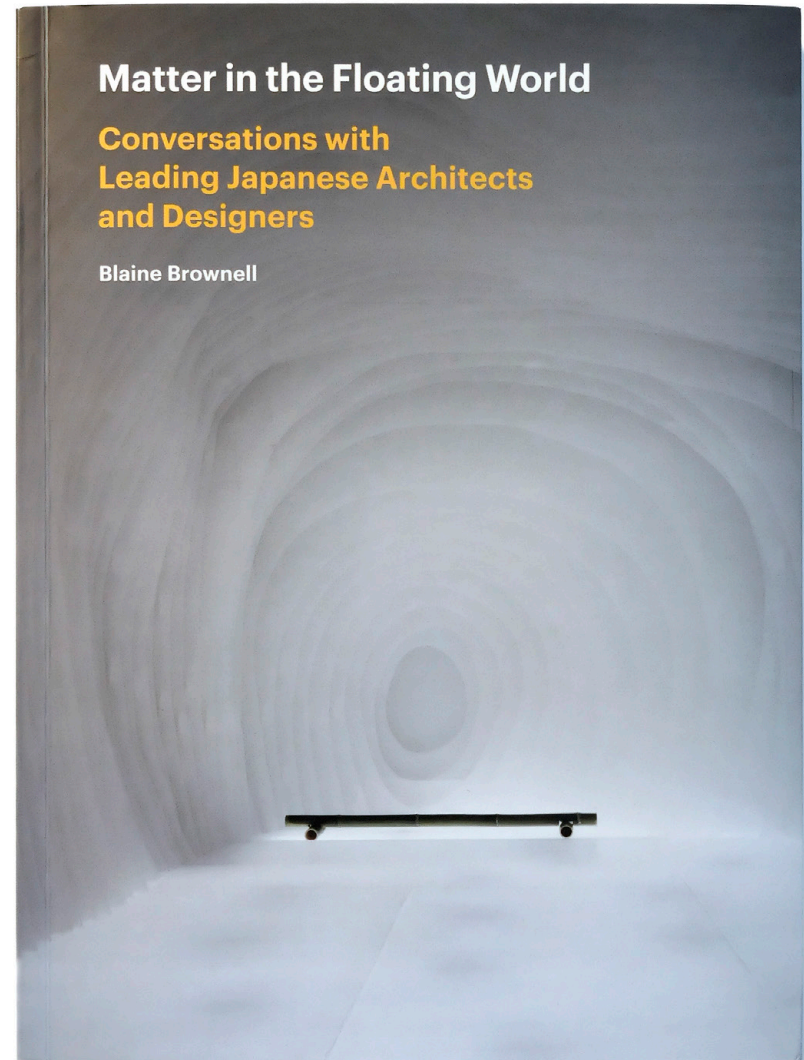
Japan contains one of the highest numbers of internationally significant architects and designers relative to its geographic size in the world. Japanese practitioners regularly implement radical experiments in new materials and building systems that successfully address imminent energy and resource challenges. These technological achievements are combined with an acute awareness of the impermanence of existence, creating a vibrant dialogue between the concrete and the abstract. However, due to language and culture barriers, such strategies remain inscrutable to many non-Japanese architects.

Strategy

To gain a deeper understanding of these approaches, Blaine traveled to the offices of over thirty leading material and design innovators in Japan to find the connections between materiality and transience in their practices. The resulting interviews and project profiles in *Matter in the Floating World* give firsthand knowledge about the design methods, strategies, and ambitions these designers apply to create groundbreaking work. The conversations also reveal their struggles, surprises, aspirations, and successes—stories that penetrate cultural barriers and become universal in nature.

Impact

Matter in the Floating World received positive attention in several reviews, including *The Plain Dealer*, *Build*, *Archdaily*, *Archidose*, and *The Curated Object*. The book's publication led to invitations to write articles on Japanese architecture for *The London Times*, the *Ax:son Johnson Foundation* in Stockholm, and *Architect*. The project also inspired Blaine to lead study abroad trips to Japan, and he has since taken seven groups of students to visit works featured in the book.



Declaration of Responsibility

I have personal knowledge of the nominee's responsibility for the exhibit listed above. That responsibility included:

- project under direction of the nominee

Jennifer Lippert

Executive Editor, Princeton Architectural Press

3.3 Exhibits

Matter in the Floating World

Copies Sold

2,341

Selected Citations

International Journal of Urban Sciences, Materia Architectura, University of Calgary, Australian National University, University of Borås, Seoul National University, ETS Architectura, Universidad Politécnica de Madrid

Selected Reviews

"A favorite... full of personal and professional insight." — **Archidose**

"Each conversation delightfully documents the well-crafted projects we've all come to expect while insightfully (re-)introducing the reader to the person behind the project." — **Build**

"Japanese architects, some trained in the United States, continue to experiment with new home building materials and using familiar materials in new ways. Their thoughts and homes are spotlighted in *Matter in the Floating World*." — **The Plain Dealer**

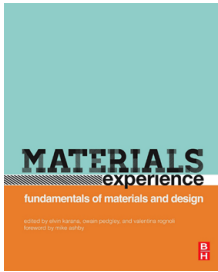
"Brownell sought to find how today's daily inundation of new materials has affected this thoughtful approach. The discussion is carried out with text and stunning photographs that help illustrate his main points." — **Archdaily**

"The work that each of these artists is producing — and their methods in doing so — are complex and technical, but Brownell for the most part pushes them to go beyond statement speak. A generous allotment of carefully chosen and beautifully presented photos furthers our understanding." — **The Curated Object**



3.3 Exhibits

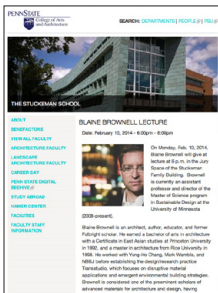
Matter in the Floating World—Related Efforts



Book Chapters. As an extension of the work in *Matter in the Floating World*, Blaine has contributed chapters to two books related to Japanese architecture. The first is “Manipulating the Material Code” in *Materials Experience: Fundamentals of Materials and Design* (Elsevier, 2013). The second is “Evoking Ihyou: The Role of Surprise in Contemporary Japanese Architecture” in *Japanese Self-Images* (Ax:son Johnson Foundation, 2019).



Articles. Blaine has written several articles about contemporary Japanese architecture. “Peering into the Floating World” in *Architectural Lighting* (June 2011) assesses how Japanese architects integrate materials and light. “An Uncertain Future,” published in a special edition of *The Times* (July 2011), evaluates strategies for post 3-11 Japanese reconstruction. “Japanese Projects that Blur the Line Between Building and Landscape” in *Architect* (June 2018) analyzes interdisciplinary projects.



Lectures. Blaine has given several talks about the book including “Matter in the Floating World: Substance and Transience in Japanese Architecture and Design” at the **Minneapolis Institute of Art** (2011), “Matter in the Floating World” at the **University of Minnesota** (2012), “Matter and Materiality in Japanese Architecture and Design” at **Penn State University** (2014), and “Surprise in Contemporary Japanese Architecture” at the **Ax:son Johnson Foundation in Stockholm, Sweden** (2016).



Seminar. In 2008, Blaine developed a graduate seminar at the University of Michigan entitled **ARCH 507: Matter in the Floating World**, a survey of the most significant shapers of contemporary material culture in Japanese architecture. In the class, students investigate particular design innovators and their approaches to materials and compile case studies of their recent architectural and design projects.



Design Studio. In 2011, Blaine created a third-year architecture graduate design studio entitled **ARCH 8255: Living Machines**. Focusing on the Tokyo waterfront, students design mixed-use proposals for the former site of the Tsukiji fish market. The work is informed by contemporary Japanese architectural theories and related material practices such as Metabolism, Makoto Sei Watanabe’s concept of Induction Design, and Atelier Bow-Wow’s method of the Environmental Unit.



Study Abroad. Since 2008, Blaine has led seven study abroad tours of Japan with students from the University of Michigan and the University of Minnesota. Participants in **ARCH 4150/5550: Architecture in the Floating World** conduct in-depth analysis of contemporary and traditional Japanese material practices. They also generate critical design proposals in collaboration with students from the Tokyo University of Science and Kansai University.



3.4 Exhibits

Material Strategies

Publisher

Princeton Architectural Press

Role

Author

Publication

2012

Challenge

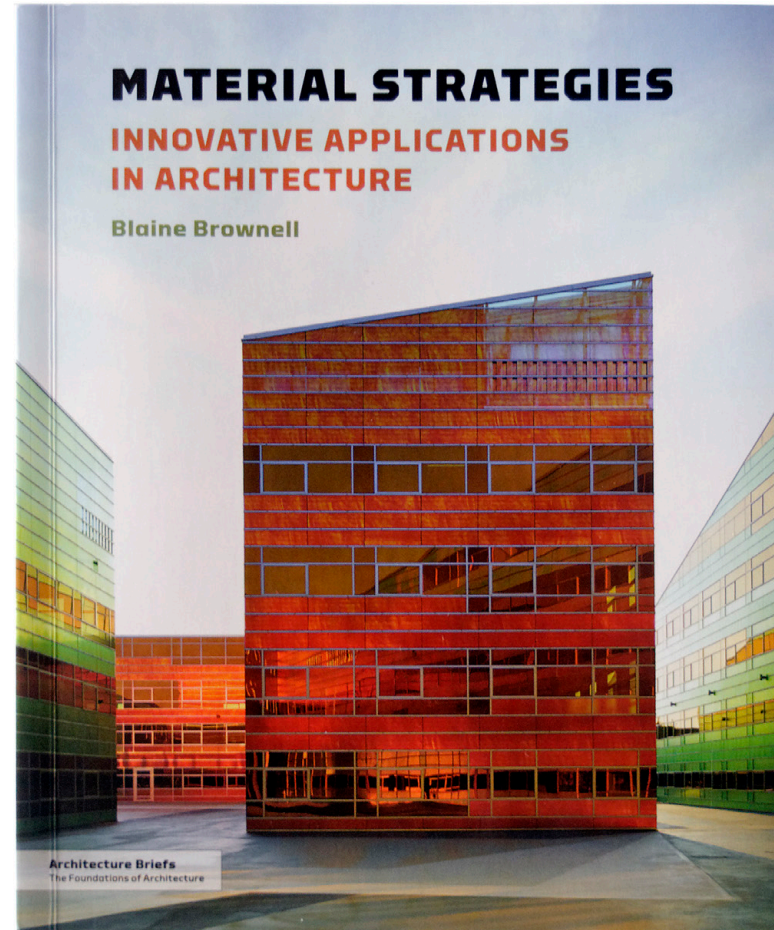
Throughout history, architecture has been shaped by the continual transformation of material technologies and application methods. Its course of development is inseparable from the shifting terrain of technology and the social effects that result. This intrinsic alignment with change—whether from a welcomed or critical perspective—reveals the extent to which architecture is inherently tied to material innovation. Yet despite the broadly appreciated need to transcend convention, specific methodologies for achieving material innovation in design are rarely taught in academia or practice.

Strategy

Material Strategies: Innovative Applications in Architecture is a primer on materials that provides insight into emerging technologies and their creative implementation. Concise chapters based on fundamental material categories describe the basic history of each material, its importance to architecture, and show how materials are applied to affect design. Each chapter closes with case studies of exceptional contemporary buildings that demonstrate the successful realization of material-based innovation. *Material Strategies* reveals how new materials are utilized to advance the architectural canon—and ultimately illustrates the transformative power of design.

Impact

Based on the book's suitability for architectural curricula, Princeton Architectural Press decided to publish an electronic book format in addition to the print version. The book received positive reviews in *Building Design + Construction*, *Architectural Products*, *Surface*, *Fast Company*, *Interior Design*, and *A Daily Dose of Architecture*. It was translated into Chinese and published in China in 2015.



Declaration of Responsibility

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- project under direction of the nominee

Jennifer Lippert

Executive Editor, Princeton Architectural Press

3.4 Exhibits

Material Strategies

Editions

English (print + electronic), Chinese

Copies Sold

6,440

Selected Citations

Architecture Follows Nature, *iMedia*, *Journal of Cleaner Production*, *Incorporating Digital Tools with Ceramic Crafting*, *Architecture and Agriculture*, *EnviBuild Buildings and Environment*, *RISD Materials Collection and Curation*, *MIT DSpace*, *Structures and Architecture*

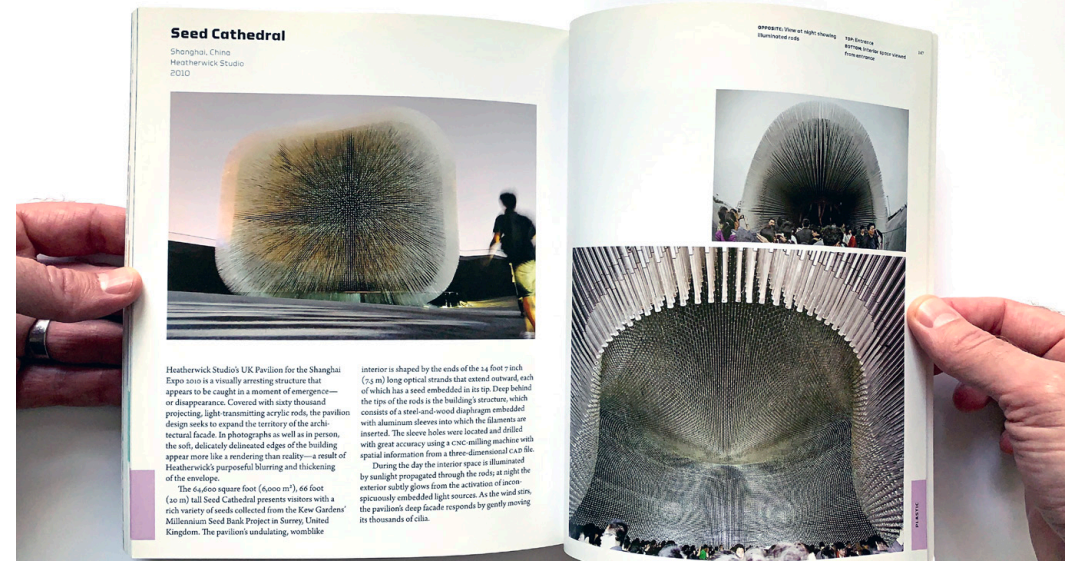
Selected Reviews

“In each case, fresh technological developments let the architects experiment with the material in a manner that would’ve seemed unimaginable to the concrete dogmatists of yore.” —**Fast Company**

“In the increasingly speculative world of digital design and online architecture, Blaine Brownell is a bricks-and-mortar kind of guy. As founding principal of Transstudio, Brownell heads a firm dedicated to emergent materials research, specializing in the development of architecture focused on innovative uses of concrete, glass, wood, metal, and plastic. And in *Material Strategies*, the author of the *Transmaterial* series offers another necessary corrective to the fields digital enthusiasts: It’s an ode to buildings blocky and chalky, friable, brassy, and glassy.... *Material Strategies* is intended not just to reacquaint architects with the nuts and bolts of architecture, but to insist, in the face of the field’s digital enthusiasts, that innovation can come not just from a drafting program but from the latent potential found in concrete, glass, masonry, wood, metal, and plastic.” —**Surface**

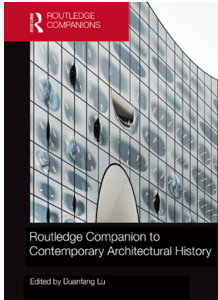
“The rate of innovation has greatly accelerated, as have the means of propagating information about new building materials. Here is a survey to bring us up to date.” —**Interior Design**

“The book is a thoughtful examination of the larger influence of materials and their relationship to culture, behavior, environment and the urban landscape.” —**Spacing Vancouver**



3.4 Exhibits

Material Strategies—Related Efforts



Book Chapter. Blaine applied the concepts outlined in *Material Strategies* to a book chapter in the forthcoming *Routledge Companion to Contemporary Architectural History* (2019), edited by Duanfang Lu of the University of Sydney. “Divergent Matter: The Manifold Material Nature of Contemporary Architecture” evaluates the recurring tensions between the notions of material appropriateness and practical construction methodologies in contemporary building design and construction.



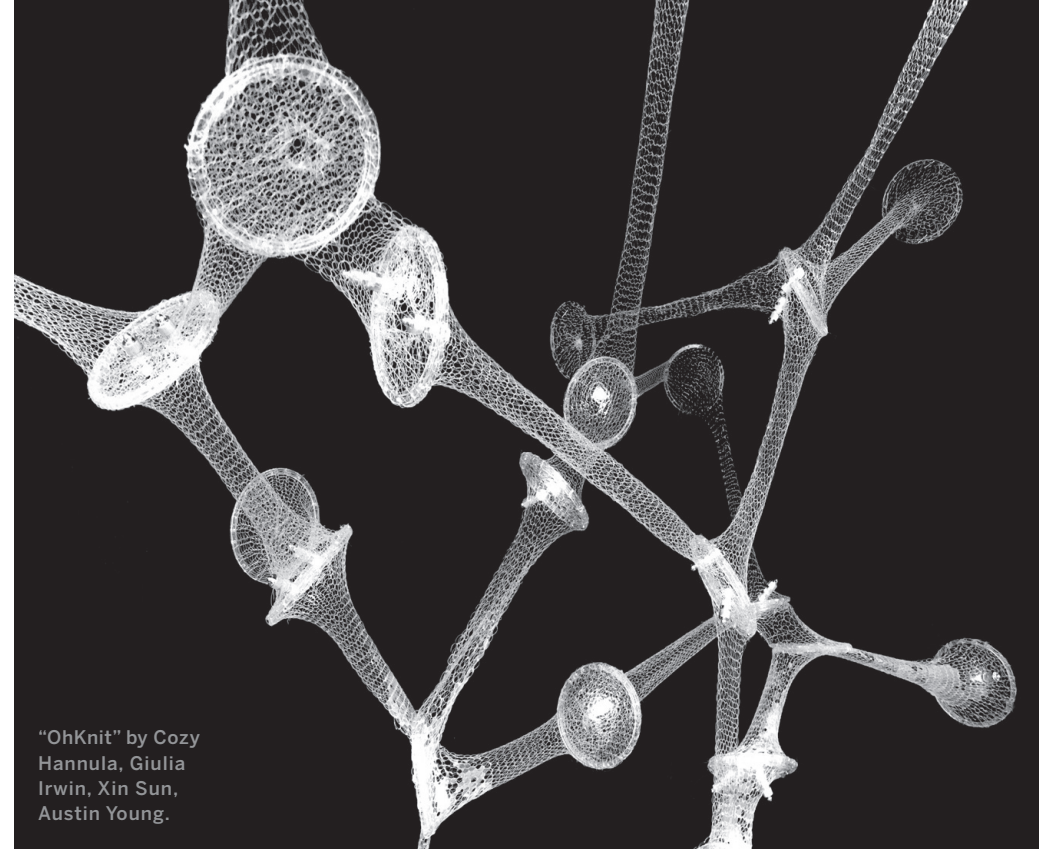
Articles. Blaine has expanded several of the themes in *Material Strategies* in individual articles. His peer-reviewed essay entitled “Material Resilience in Two Dimensions” was the cover story of the *Journal of the National Institute of Building Sciences* in April 2014. Blaine addressed material and light interactions in “Light as Material” in *Material Discoveries I* (2013) and “Light in an Expanding Field” in *Architectural Lighting* (December 2012). His column in *Architect* is also an outlet for many related essays.



Lectures. Blaine has given several talks related to the book content including “Material Agency” at *Architect Connections* in Napa (2017), the *New Jersey Institute of Technology* (2017), the *AIA Practice + Design Conference in Keystone*, Colorado (2015), and the *University of Houston* (2015). He presented “Material Strategies” at the *Copenhagen Innovation Lab* (2014), and “The Third Skin: The Building Envelope in Transformation” at *Kent State University* (2013).



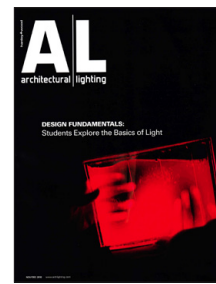
Seminar. In 2009, Blaine developed a graduate seminar entitled *ARCH 5541: Material Strategies*. This course provides students with a strong foundation of materials knowledge related to contemporary environmental, technological, and social issues in architecture. Students research innovative material approaches based on a study of global material and resource flows, technological trajectories, and potential sociocultural effects.



“OhKnit” by Cozy Hannula, Giulia Irwin, Xin Sun, Austin Young.



Design Studio. In 2018, Blaine co-taught a graduate design studio entitled *ARCH 5250: Generative Matter—Procedural Material Design in Architecture* with Marc Swackhamer and Blair Satterfield. This studio provides an opportunity for students to ask critical architectural questions through the lens of materials. Engaging in a heuristic approach using widely available materials, students develop new spatial, site, and programmatic arguments based on rigorous material testing.



Catalyst Workshops. Since 2009, Blaine has co-taught *ARCH 5110: Architecture as Catalyst* design workshops on material applications with invited guest instructors such as: Doris Sung and Dylan Wood, DOSU (Shrivel and Shrink, 2015); Martina Decker and Peter Yeadon, Decker Yeadon (Stimulus Package, 2014); Billie Faircloth and Ryan Welch, KieranTimberlake (Materials as Probes, 2013); and Sheila Kennedy and Frano Violich, KVA MATx (Third Nature, 2012).

3.5 Exhibits

Hypernatural

Publisher

Princeton Architectural Press

Role

Co-author with Marc Swackhamer

Publication

2015

Challenge

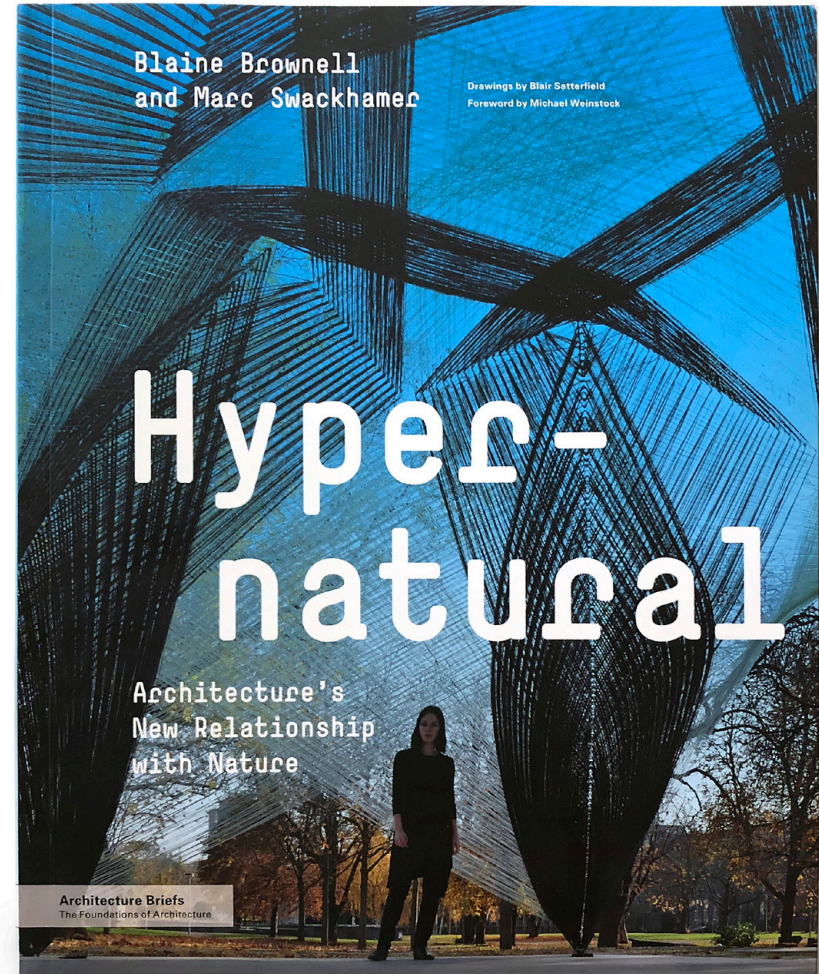
Recent decades have witnessed the increasing popularity of nature-focused movements such as sustainability, biophilia, biomimicry, biodesign, and emergent design. Although overlaps exist, there is no common discourse that unites these areas of study. In both academia and practice, the conviction that nature holds the keys to the advancement of technology and design is now a primary motivator. Yet many contemporary architects, scientists, and engineers are pursuing a specific nature-related agenda without extensive knowledge of each other's approaches or the historical influences that have shaped them.

Strategy

Hypernatural: Architecture's New Relationship with Nature attempts to establish an inclusive and coherent framework that enables the diversity of nature-related movements to be more fully understood. The book argues a new position on technology and its relationship with nature, which is supported by contemporary examples from a wide range of fields that directly influence architecture. The book is organized according to seven domains of natural science, with sections devoted to history, material technologies, architectural applications, and project case studies. This structure establishes a clear and comprehensive discourse relating to the ways in which nature is utilized, emulated, and transformed within the designed environment.

Impact

Hypernatural received positive reviews in notable publications including *The Wall Street Journal*, *The Cleveland Plain Dealer*, *The Boston Globe*, *The Architect's Newspaper*, *Azure*, and *Build*. The book inspired an exhibition that traveled to two universities—as well as a graduate-level architecture studio taught for three years at the University of Minnesota.



Declaration of Responsibility

I have personal knowledge of the nominee's responsibility for the exhibit listed above. That responsibility included:

- project under co-direction of the nominee

Jennifer Lippert

Executive Editor, Princeton Architectural Press

3.5 Exhibits

Hypernatural

Copies Sold

2,100

Related Exhibitions

University of Minnesota, University of Wisconsin-Milwaukee

Selected Citations

Interdisciplinary Expansions in Engineering and Design, Materials Science Forum, Biomimetic, Natural Complexity, Sustainability, TU Darmstadt

Selected Reviews

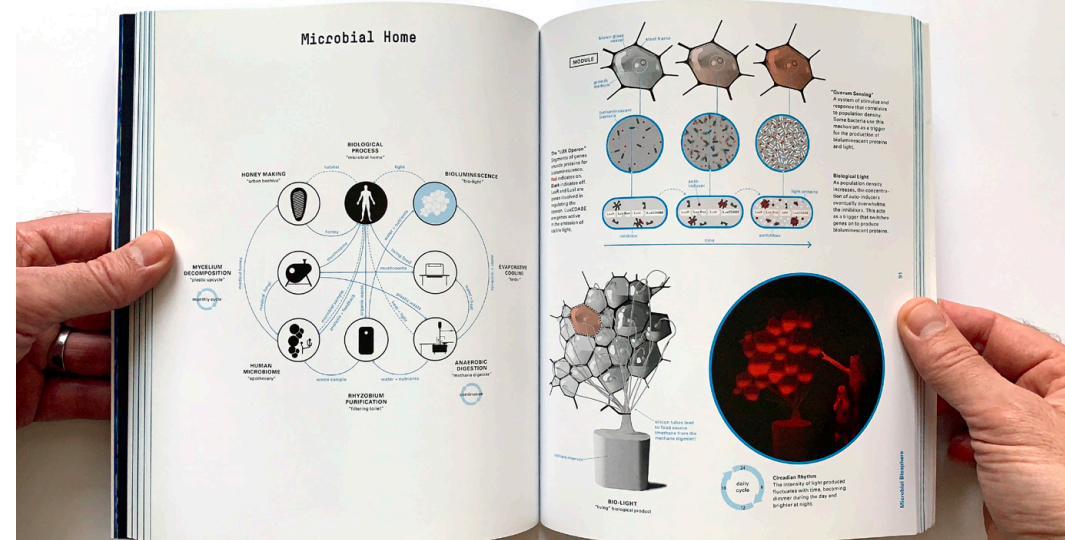
“Where will future architects find inspiration? In their new book *Hypernatural*, authors Blaine Brownell and Marc Swackhamer of University of Minnesota describe how designers and architects have started to copy nature...” — **The Wall Street Journal**

“Some examples are more illustrative and just hint at future possibilities. But others are places where humans around the world live, work and play.” — **The Cleveland Plain Dealer**

“When we think of achievements in architecture, we think of buildings that defy nature — towers of glass, steel, and concrete rising to the sky. At the cutting edge of architectural design there’s another trend, though, that’s less about overpowering nature and more about utilizing it for our own purposes.” — **The Boston Globe**

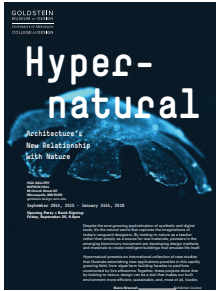
“...the value of this book is the clarity with which it breaks down this burgeoning field of bio-materialism and highlights the ecology of buildings and spaces in ways that are more than metaphors. *Hypernatural* is a really useful resource. And perhaps as the idea of sustainability tired, and was displaced by ‘resilience’ as the dominant eco-idea, *Hypernatural* may give new impetus to an idea of sustainability that seemed reactive and conservative rather than adaptive and creative.” — **The Building Centre (London)**

“Moving from minimalism to a more nature-inspired take on installation art, a new generation is turning to biomimicry, parametricism, responsive materials and a host of other strategies... *Hypernatural* touches on a diverse assortment of design projects that owe much to nature.” — **Azure**

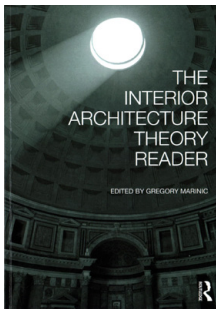


3.5 Exhibits

Hypersnatural—Related Efforts



Exhibitions. Following the publication of *Hypersnatural*, Blaine and co-author Marc Swackhamer designed an accompanying exhibition with Blair Satterfield, who produced the book illustrations. The *Hypersnatural* exhibition was installed at the **University of Minnesota College of Design** from September 26, 2015 to January 24, 2016, and at the **University of Wisconsin-Milwaukee School of Architecture and Urban Planning** from February 26 to April 7, 2017.



Book Chapters. Blaine expanded the *Hypersnatural* topic in the book chapter “Living Rooms: The Hyper-Naturalization of the Interior,” a survey of recent biology-inspired developments in interior architecture, in ***The Interior Architecture Theory Reader*** edited by Gregory Marinic (Routledge Press, 2018). Blaine also contributed “Biomimicry and Biodesign” to the book ***Designed for the Future: 80 Practical Ideas for a Sustainable World***, edited by Jared Green (Princeton Architectural Press, 2015).



Lectures. Blaine has lectured on the book in a variety of academic and professional venues including the **FAB Biennale in Mumbai, India (2018)**; **University of South Carolina (2017)**; **AIA Vision Cincinnati (2016)**; the HOPES 22 Conference, **University of Oregon (2016)**; **Tongji University in Shanghai, China (2015)**; and **ASODI: Guatemala City, Guatemala (2014)**. Blaine gave the “Hypersnatural” lecture with Marc Swackhamer at the annual **AIA Minnesota** state convention in 2015.



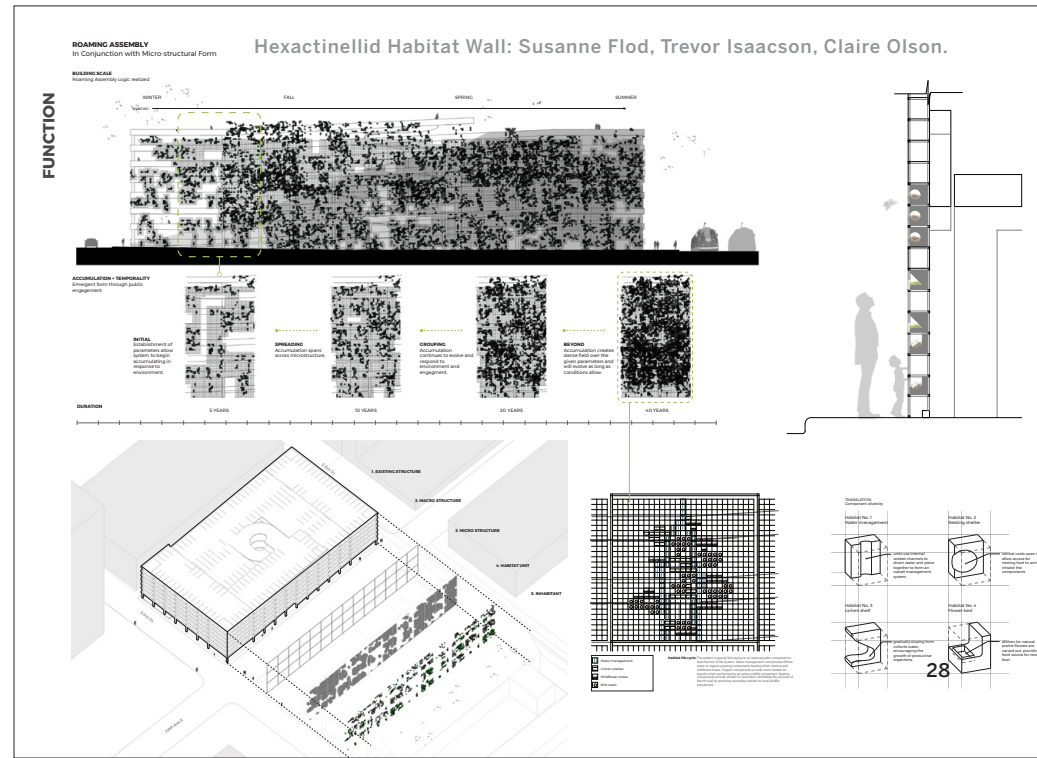
Webinar. As the 2014 Materials and Products Chair for the Vision 2020 Sustainability Council, Blaine was asked to contribute a webinar on Hanley Wood’s *EcoBuilding Pulse* website. The online program “Hypersnatural: Architecture’s New Relationship with Nature” outlines the strategies architects can use to develop a more informed and sophisticated relationship with natural systems.



Symposium. Blaine co-hosted the Biologically Motivated symposium at the **University of Minnesota** in April 2016 with architecture, biology, and art colleagues Neil Olszewski, Emilie Snell-Rood, Marc Swackhamer, and Diane Willow. The event convened students, faculty, and guest speakers for a series of talks and discussions that centered on interdisciplinary work in biology, architecture, engineering, and art. The UMN School of Architecture published the proceedings following the symposium.



Design Studio. Blaine co-taught the M.Arch design studio **ARCH 5250: Hypersnatural** with Marc Swackhamer three consecutive times since 2015. This studio examined how a partnership with nature might yield unexpected, novel solutions to challenging architectural problems. Students developed innovative solutions to common design challenges using natural models as guides. Several participants presented their work at the **2017 Biodesign Challenge** at the **Museum of Modern Art** in New York.



3.6 Exhibits

From Matter to X-Matter

Publisher

Materials and Design, Elsevier

Role

Author

Publication

2016

Award

Key Scientific Article, 2016

Challenge

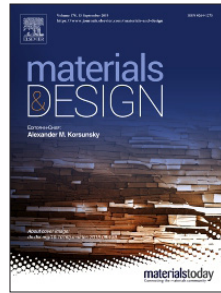
As material technologies become more sophisticated, their relationship to data—and the digital realm in which electronic data resides—has become paramount. Matter and information are converging rapidly in design and construction processes, yet little is discussed about the potential implications of this merger for future design practice or the physical environment.

Strategy

The article “From Matter to X-Matter” explores the inherent technological capacities and opportunities represented by this evolving relationship between matter and information. X-matter (extended matter) connects the information revolution of the late twentieth century with the material revolution of the early twenty-first century. This essay proposes a holistic framework in which to understand the evolving relationships between matter and data, aimed towards individuals within built environment-related disciplines.

Impact

Accepted for publication in the peer-reviewed journal *Materials and Design* (Elsevier), the article was awarded the designation of “Key Scientific Article” by *Advances in Engineering Research News* on May 30, 2016. It has since been cited in publications by Springer, Elsevier, and the Auckland University of Technology.



Declaration of Responsibility

I have personal knowledge of the nominee's responsibility for the exhibit listed above. That responsibility included:

- project under direction of the nominee

Elvin Karana

Special Issue Editor, *Materials and Design*

3.7 Exhibits

Inventive Matter

Publisher
Columbia University/Lars Müller Publishers

Role
Author

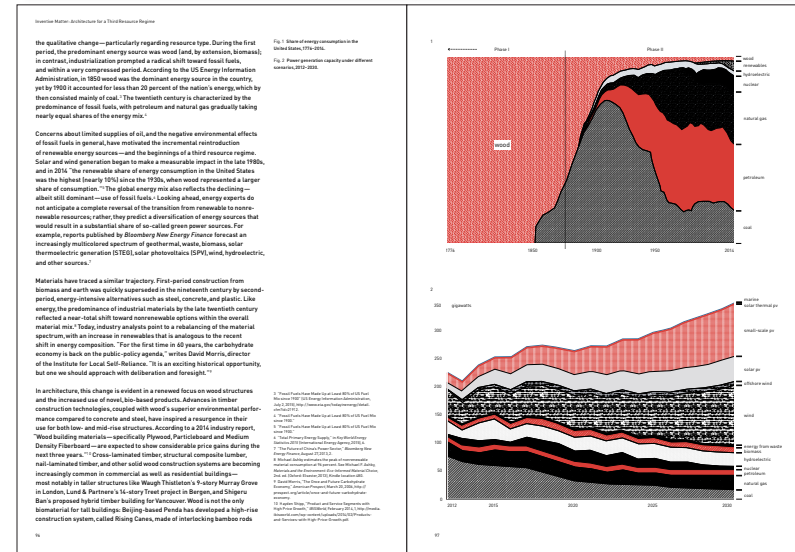
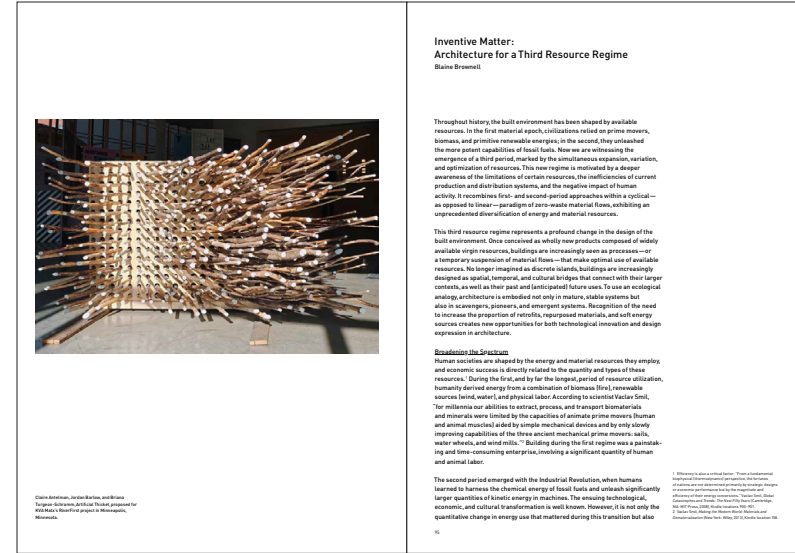
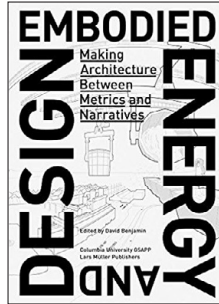
Publication
2017

Related event
Embodied Energy and Design Symposium, Columbia University, 2016.

Challenge
The diversification of energy and material resources represents one of the most potent territories for architectural innovation. Recognition of the environmental need to increase the proportion of retrofits, repurposed materials, and soft energy sources creates new possibilities for both technological innovation and design expression in architecture. However, this opportunity remains largely untapped in terms of both the quantity and quality of adoption.

Strategy
"Inventive Matter: Architecture for a Third Resource Regime" is a chapter in the 2017 book *Embodied Energy and Design: Making Architecture Between Metrics and Narratives*, edited by David Benjamin and published by Columbia University in partnership with Lars Müller Publishers. The essay positions contemporary architecture within a historical trajectory of ever-diversifying resource utilization, arguing that today's resource epoch requires a significantly more diversified and enterprising approach than the pre-industrial and industrial eras. It outlines a variety of strategies architects can implement using this revised resource outlook.

Impact
The book chapter is based on a lecture Blaine gave at Columbia University as part of a public symposium on embodied energy in 2016. Since the book's 2017 release, it has been cited in publications by the Massachusetts Institute of Technology, Rochester Institute of Technology, University of Oregon, and Universitat Politècnica de València.



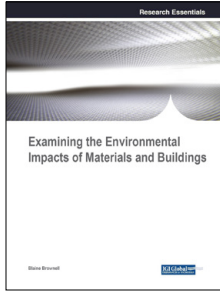
Declaration of Responsibility
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- project under direction of the nominee

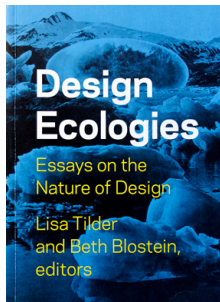
David Benjamin
Editor, *Embodied Energy and Design*

3.7 Exhibits

Inventive Matter—Related Efforts



Book (forthcoming). Blaine is the editor of the upcoming book *Examining the Environmental Impacts of Materials and Buildings* (IGI Global, 2020), which is related in content to “Inventive Matter.” This book aims to collect and disseminate the latest blind peer-reviewed scholarship regarding environmental performance measurement with a primary focus on material flows and embodied impacts within the built environment.



Book Chapters. Blaine has addressed the need for enhanced resource-awareness in two book chapters: “Determining Architecture’s Footprint: Preliminary Methods for Measuring the True Environmental Impact of Buildings” in *Reusable and Sustainable Building Materials in Modern Architecture*, edited by Gülsah Koç and Bryan Christiansen (IGI Global, 2019) and “Material Ecologies in Architecture” in *Design Ecologies*, edited by Lisa Tilder and Beth Blostein (Princeton Architectural Press, 2009).



Articles. Blaine has written about inventive environmental strategies in publications such as “The Aesthetics of Green: Material Expression in Sustainable Architecture” in *Techne Journal* (2018), “Organic Chemistry” in *Architecture Boston* (2017), “Nature 3.X: Where is Nature Now?” in *Landscape Journal* (2015), “Visible Green: New Material Opportunities in Sustainable Design” in *EcoBuilding Review* (2014), and “Testing Ground: Emergent Green Materials and Architectural Effects,” the cover story in *A+U* (2010).



Seminar. Since 2009, Blaine has taught **ARCH 8565: Material Performance in Sustainable Building**, a required graduate course in the Master of Science in Sustainable Design program. Initially developed by faculty at the Center for Sustainable Building Research, the seminar investigates the complex issues associated with green building material selection, fabrication, construction, and deconstruction processes in the production of high-performance, sustainable building designs.



“PET Wall,” University of Michigan (2008).



Installation. Attempting to tap the unexplored light-dispersing potential of a typical consumer waste product, Blaine installed a self-supporting, luminous curtain composed of repurposed polyethylene terephthalate (PET) bottles and integrated light-emitting diode (LED) nets at the **University of Michigan College of Architecture and Urban Planning** in 2008. The project was selected as the cover article of the peer-reviewed *Journal of Architectural Education* (November 2008) and *A+U* (2010). ▲



Lectures. “Inventive Matter” was inspired by a talk Blaine gave at **Columbia University** (2016). Related lectures include “Vital Matters” at **Materials Matter: AIA Colorado** (2019); “Visible Green” at **Greenbuild New Orleans** (2014); and “Materials for the Carbohydrate Economy” at the **Green Nation Festival: Rio de Janeiro, Brazil** (2012), the **Danish Architecture Center in Copenhagen, Denmark** (2012), and **Material Xperience in Rotterdam, The Netherlands** (2012).

3.8 Exhibits

Mind & Matter

Publisher

Architect, Hanley Wood

Role

Author

Publication

2009–present

Challenge

Thoughtful material selection is critical to producing architecture. Despite the best intentions, however, material selection in architectural practices is often conducted hastily and in the service of checking boxes on sustainability scorecards. The new materialism has become a hyper-technological consideration in both praxis and academia. However, in the process of embracing so-called green design, building information modeling, and digital fabrication, we must not forget the potential for architecture to benefit society and culture as well. The advancement of architecture depends not only upon a technological mastery of materials but also a sophisticated understanding of how they are perceived.

Strategy

In 2009, Blaine became a contributor to *Architect*, writing a regular online and print column entitled “Mind & Matter.” The column is devoted to the relationship between materials and consciousness, corporeality and cognition. Ongoing research and design efforts probe diverse topics related to the constructed environment—such as resource flows, disruptive technologies, cross-cultural dialogues, and new design pedagogies—in an attempt to broaden architects’ perspective on the meaning of materiality in architecture.

Impact

As of today, Blaine has contributed over 670 articles to the Mind & Matter column in *Architect*. This number includes over 550 short pieces (250-750 words) and more than 110 long-format pieces (1,000-1,200 words) online. Over 50 of these articles have been included in the print edition of the magazine (shown here), which reaches an audience of over 90,000 AIA members. The online pieces reach a broader audience, with some individual posts topping 40,000 page views.



Declaration of Responsibility

I have personal knowledge of the nominee’s responsibility for the exhibit listed above. That responsibility included:

- project under direction of the nominee

Katharine Keane

Senior Associate Editor of Technology, Practice, and Products,
Architect magazine

3.8 Exhibits

Mind & Matter

Print Subscriber Base
90,000+

Example Citations

International Journal of Advances in Engineering & Technology, Nexus Network Journal, Um Estudo Sobre Arquitetura Têxtil no Brasil

Example Print Article (right)

This article was one of seven that collectively won the 2018 Grand Neal Award in the 64th Annual Jesse H. Neal Awards, one of “the most prestigious editorial honors in the field of specialized journalism.”

Example Online Article (lower right)

Since 2009, Blaine has been featured on *Architect's* masthead as a regular columnist and contributor to the magazine.



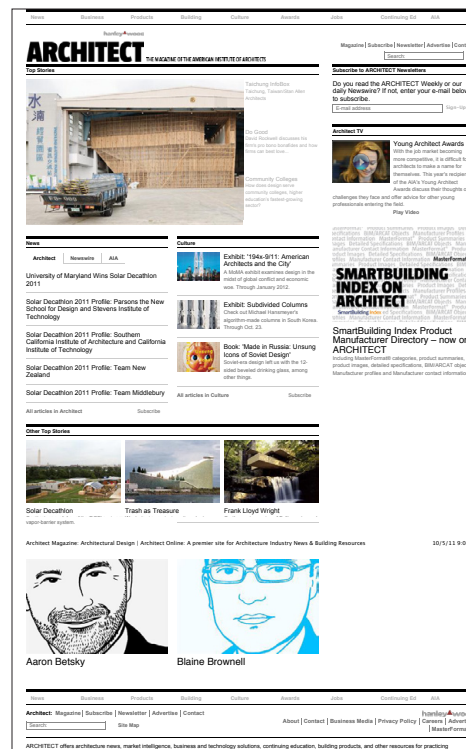
Banking Carbon
The currency of sustainable design is carbon, yet we still treat it as an abstract concept, based on estimates of how much carbon dioxide is produced throughout a material's life cycle. Although conceptual carbon accounting is an important process for measuring environmental effects, we forget that carbon can also literally be stored within certain substances. While the manufacture of many building materials, including steel, concrete, and plastics, consume measurable quantities of carbon dioxide to the atmosphere—resulting in poor environmental performance—biomass, such as wood and other plant materials, acts as a carbon reservoir, storing more carbon than it releases. Unless the material decays, burns, or is destroyed, the carbon will remain embedded within. Buildings with a significant amount of biomass-based materials (sustainably harvested, of course) may therefore be viewed as carbon banks.

Adapt and Reuse
A notoriously held tenet within sustainable design circles is that the greenest building is the one that is already built, since replacing it from one material and energy use paradigm for another. By reusing existing structures, building systems, and materials, a design team can reduce the environmental impact of a structure while “reviving successful cities and neighborhoods,” writes the National Trust for Historic Preservation in its Preservation Leadership Forum website. Moreover, the Trust argues, “historic fabric creates economically viable, socially equitable, and strong, resilient neighborhoods.”

Increasingly, there are compelling instances of retrofit structures that once might have been considered non-and-look projects. For example, Paris-based Local Architect Network (LAN) decided to wrap a collection of retired concrete towers in Bordeaux, France, in new skins of glazing prefabricated in China. The decision avoided a massive demolition and construction effort, and the resulting translucent ponds have increased the visibility of the facade for users. To achieve the full potential of reuse, the architects could have specified repurposed or recycled materials for this envelope—including the glazing, showing as well as the aluminum framing and connections. An architect's default strategy at every scale, site, structure, and materials-should be to privilege the existing over the new. Of course, new products are always an option, but they should not be the first.

Follow the Light
The building envelope is a treasury of environmental credits. One question requires daylight, views, and fresh air, but these are only available at the expense of the facade's thermal performance. It is often assumed that a window is a thermal hole—with poor insulative capacity compared to a solid wall construction—and more glazing equals more energy use, but less occupant comfort due to increases in heat and solar heat gains. However, not all light-transmitting materials have this drawback. For example, Boston-based chemical and performance materials company Cabot Corp. manufactures Lumin spray, a translucent, silica-based insulating material for a variety

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MIND & MATTER

Improving New Ideas by Building on Old Concepts

Blaine Brownell explores four strategies for finding future success with lessons from the past.

By **BLAINE BROWNELL**

Blaine Brownell

Miralles Tagliabue EMBT specified handwoven wicker mats as cladding on the Spanish Pavilion for the Expo 2010 Shanghai China.

“Old is the new new,” declares author Steven Poole in *Rethink: The Surprising History of Ideas* (Scribner, 2016). We often think of technological progress as moving continually forward. Yet despite common wisdom, ideas frequently emerge by revisiting the past. “We are living in an age of innovation,” Poole writes. “But it is also an age of rediscovery. Because surprisingly often, it turns