EDUCATION

Harvard University Graduate School of Design, Cambridge, MA

Doctor of Design: 2015 Dissertation: A Framework for Understanding Automated Additive Manufacturing and Construction (AAMC) of Buildings

Virginia Tech School of Architecture + Design, Blacksburg, VA

Master of Architecture, 2012 Thesis: Implementation of Manufactured Components in User Assembled, Prefabricated Building Systems *Master of Science in Architecture: Industrial Design Concentration*, 2012 Thesis: Deployable Infrastructural Support for Science and Education.

Randolph-Macon College, Ashland, VA

Bachelor of Arts in Studio Art, cum laude, with Honors, 2002 Thesis Exhibition: A Time in Place: Large Format In-Situ Painting, Pace Gallery **Bachelor of Arts in Art History,** cum laude, with Honors, 2002 Thesis: Black Mountain College: Art as the Foundation for Education.

PROFESSIONAL EXPERIENCE

2022- Present	Industrialized Construction Research Lead, Autodesk, Boston MA
2020- 2022	Global Senior Strategic Relationships Manager, Autodesk , Boston MA As Global Senior Strategic Relationships Manager for Autodesk Research, develop and manage industry relationships that contribute to the overall strategic direction of the organization. Working closely with customer success teams, researchers and industry partners to navigate complex corporatize relationships, partnerships, and agreements relating to collaborative project development and execution. With senior Research leadership, develop research priorities for the company and execute programs across the organization. Develop comprehensive strategy for development of programs related to automation, robotics, and convergence of technologies in manufacturing and construction.
2017- 2020	Global Senior Industry Engagement Manager (AEC), Autodesk , Boston MA As part of the Technology Centers senior leadership team created the global Technology Centers organization including locations in San Francisco, Toronto, Birmingham (UK), and Boston. As Global Senior Industry Engagement Manager, led the creation of a Business Development team within the Autodesk Technology Centers focused on the development of relationships across North America including global organizations. The engagement team managed strategic relationships across equipment producers, manufacturers, architecture, engineering and construction groups, along with industry organizations and incubators. In addition, co-led the development of a multi-organization robotics strategy intended to drive decision making across multiple facets of the company in relation to industrial robotics.

Technical Advisor and Programs Manager, Autodesk, Boston MA

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	As Technical Advisor and Programs Manager for the Autodesk Technology Center in Boston (formerly BUILD Space), working in collaboration with senior Autodesk leadership to propose, socialize, and prove the viability of the 36,000 ft/2 research and demonstration facility in Boston's Seaport District. During facility development I led the creation of long- term equipment acquisition strategies including the creating relationships with equipment producers. In addition to facility development, I had a lead role in the conceptualization and realization of the Autodesk Technology Centers residency program which offers industry organizations, university teams and others, access to prototyping equipment space, and technical guidance in a space intended to enable industry innovation and collaboration across sectors. This residency program now houses up to 2000 residents per year across manufacturing, engineering, architecture, and construction fields and continues to evolve to support industry collaboration.
2013-2016	Director, MASS Design Group, Boston MA and Kigali Rwanda As founding Director of Research at MASS Design Group, I collaborate on the development of a practice-based research entity that participates in design and construction while identifying new opportunities for research, enables seamless integration of applied research findings with next generation building design and construction, and provides better design solutions for buildings and related infrastructure in support of sustainable health care in resource limited settings across sub-Saharan Africa. As part of this role, I developed and managed industry, NGO, and governmental partnerships including collaborations with the United States, Centers for Disease Control (CDC) and the United Stated Agency for International Development (USAID).
2015-2016	Strategic Development Adviser , Makers Academy; Enugu, Nigeria The <i>Makers Center for Leadership & Innovation</i> is a world class academic institution located in Enugu, Nigeria, comprised of a college preparatory residential high school with a focus on technology and project-based learning, and a community learning and co- making space equipped with cutting edge prototyping machines and software opening in 2017. The Makers Academy curriculum will be the first STEM curriculum in Nigeria. As programs development lead, formalize the development of infrastructure, partnerships, and programs including start ups in residence, business development and incubation, and active workshop facilities.
2015-2017	President, Front Porch Automation, Boston MA Front Porch Automation (FPA) is a Design Technology company focused on the development and advancement of research, pedagogy, and production through a merger materials systems research and emerging computational design and fabrication technologies. Formally founded in 2015 by Nathan King, FPA has been operating as an independent consultancy since 2005. Specializing in research methodologies for Industrial Design and Architecture, Engineering, and Construction industries, facility development and tooling, computational workflows, automation in construction, and emerging safety protocols for collaborative robotics.
2012-2013	Research Fellow, MASS Design Group, Boston MA As Designer, participate in the design and construction of a <i>Cholera Treatment Center</i> in Port au Prince, Haiti. (To be completed January 2013)) As Research Fellow, develop a long-term research strategy that links high performance design and construction technologies with local construction techniques in developing regions. Cholera Treatment Center: With David Salidik the design and construction of medical facility in Port au Prince Haiti.
2011-2012	Design Consultant, The MEME-Design Innovation Consultancy, Cambridge MA. As freelance design consultant participate in periodic ideation workshops and design reviews relating to the design integration of emerging technologies in consumer electronics, user interaction, transportation infrastructure, and strategic research and design innovation.
2011	Ann Arbor Michigan, Municipal Center Plaza, with Herbert Dreiseitl, Cambridge MA Design commissioned by the city of Ann Arbor included the design and fabrication of patterns used in the casting of a complex bronze sculpture and formwork for precast

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	concrete elements. Dedication, October 4th, 2011.
2007-2010	Furniture Designer, David Rowland Design, Marion VA Collaborated on several furniture designs including a high-density stackable storage system based on the <i>40/4 Chair</i> patented by Mr.Rowland in 1964.
2002-2007	President and Founder, NKL Communications <i>NKL Communications</i> , a communications technology and sales consultancy established to support the regional distribution of consumer and commercial wireless communications systems through Cellular Sales of Virginia and Verizon. Peak annual revenue generation of \$6.2M (\$2.4 M sales and \$3.8 M residual contracts)

AWARDS

2022	University Award for Outreach Excellence, Virginia Tech
2020	Excellence in Outreach, School of Architecture + Design, Virginia Tech
2019	American Society of Civil Engineers (ASCE) Charles Pankow Award for Innovation
	American Society of Civil Engineers (ASCE)- w/Team.
2019	Excellence in Outreach Award, Virginia Tech, School of Architecture + Design
2017	Excellence in Scholarship Award, Virginia Tech, School of Architecture + Design
2015	Innovator in Practice Fellowship, University of Virginia (UVA)
2015	Class Favorites: Best Projects of 2015, (w/MASS Design- CTC)
2015	10 Best Buildings of 2015, Azure Magazine, (w/MASS Design- CTC)
2015	Sappi Ideas That Matter, Winner, (w/MASS Design- CTC)
2015	Design Boston Biennial, Winner, (w/MASS Design- CTC)
2014	AIA National Healthcare Design Awards, Winner, (w/MASS Design- CTC)
2013	Professor Daniel Schodek Memorial Research Fellowship, Harvard GSD
2013	Buckminster Fuller Challenge, Semi-Finalist, MASS Design LAB (Lead)
2012	American Institute of Architects, Honor Award, Virginia Tech LumenHaus, Team Award
2012	Graduate School of Design Community Service Fellowship, Harvard University
2012	Public Interest Design Awards, Honorable Mention, Structures for Inclusion
2010-2012	Harvard Center for the Environment, Graduate Fellowship, Harvard University
2011	Winner, Intelligent Cities Competition, National Building Museum, Washington D.C. (With K. Bennett, G. Talirico, and J. Zawistowski)
2010	Winner, European Union-Solar Decathlon, Virginia Tech, LumenHaus, Team Award
2009	XCaliber Award for Exceptional Contributions to Technology Enriched Learning
2008	University International Outreach and Service Award, Virginia Tech
2006	University Outstanding Graduate Student Award, Virginia Tech
2006	National Council of Architectural Registration Board (NCARB) prize, Team Award for Creative Integration of Practice and Education in the Academy, Honorable Mention, Virginia Tech
2005	First place in Architecture and Design, Solar Decathlon, Virginia Tech, Team Award
2005	American Institute of Architects-Presidents Citation, Team Award, Virginia Tech

GRANTS | FUNDING

2019

Distributed Healthcare-Zambia, DIA-Africa and Make it Rain: In-Kind, (\$10K)

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2018	Distributed Healthcare-Uganda, Howick Inc; In-Kind, (\$60K)
2018	Steelcase; Sponsored Research, w/ Drs Erik Komendera and Chris Williams (ME) (\$50K)
2017	Government of Malawi; Sponsored -Research w/ R. Dunay and AJ. Davis (\$27K + Match)
2017	Autodesk BUILD Space grant Digital Glass; Sponsored Research, (\$40K)
2016	Aging in Place, Autodesk w/ GE Appliances, Sponsored Research, (\$15K)
2016	Autodesk Foundation Impact Design Grant-, Virginia Tech, Center for Design Research; (\$100K)
2016	Institutional Renovation Grant, Virginia Tech; with R.Dunay and D.Clark (\$140K)
2016	Glass Infrastructure Development Funding, Virginia Tech (SCHEV), (\$120K)
2016	Log Jam! Autodesk for SmartGeometry2016; with G.Fagerstrom and N.Cote (\$5K)
2016	Dynamo BUILD! RobArch2016; w/G.Fagerstrom M.Jezyk, and N.Cote (\$5K)
2016	Sponsored studio; Prince William County EcoPark; with R.Dunay and D.Clark (\$53K)
2015	Sponsored studio; Prince William County EcoPark; with R.Dunay and D.Clark (\$55K)
2015	Robotic Fabrication of Optimized Grid Shell Structures; Autodesk (\$10K)
2015	Additive Manufacturing in Construction through Design Robotics; Autodesk (\$25K)
2015	Automated Design-to-Robotic Fabrication for Grid Shell Structures; Autodesk (\$35K)
2015	Additive Manufacturing and Automation in Construction; ICAT-VT (\$22K)
2015	Institute for Creative Arts and Technology (ICAT) SEAD Award- Virginia Tech (\$3K)
2015	Center for Disease Control and Prevention (CDC) for AIC (MASS): (\$70K)
2015	URC- TB Care II- Airborne Infection Control Training (MASS): (\$65K)
2014	Computational Design Workflows for Robotic Fabrication- Autodesk (\$10K)
2013	RISD 2050 Grant, Glass Robotics Laboratory; RISD: (\$15K)
2014	Smart Geometry, Projecting Informal Settlements; ECADI and SG (\$20K)
2014	Robotic Glass Fabrication; VT-CAUS Center for Design Research; (In kind \$15K)
2014	ASCER Tile of Spain, Course Sponsorship; Harvard GSD; (\$5K)
2011-2014	CAUS Design Robotics Initiative for Advanced Fabrication (SCHEV); Virginia Tech (\$350K)
2010	Industry Sponsorship, Future Fabrication Co., Ann Arbor, Michigan (\$6K)
2008-2009	User Assembled Building Systems; Student Research Grant, Virginia Tech (\$3K)

TEACHING SUMMARY (Organized by school)

UNIVERSITY OF PENNSYLVANIA, WEITZMAN SCHOOL OF DESIGN (2021-Present)

2020-Present Lecturer in Design – Robotics and Autonomous Systems

HARVARD UNIVERSITY, GRADUATE SCHOOL OF DESIGN (2009-Present)

2018-Present	Instructor of Architecture and Design Technology
2013-2014	Instructor of Architecture and Design Technology
2009-2013	Teaching Fellow in Design Technology w/M. Bechthold and C. Hoberman
2011	Teaching Fellow in History and Theory of Architecture w/ R. Moneo and P. Eisenman
2010-2013	Lead Design Robotics Teaching Assistant: Fabrication Laboratory
2009-2011	Teaching Assistant w/ Mark Mulligan and Antoine Picon
2009-2010	Woodshop Instructor: Carpenter Center for the Visual Arts

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VIRGINIA TECH, SCHOOL OF ARCHITECTURE + DESIGN (2005-Present)

2015-Present	Co-Director, Center for Design Research	
2015-Present	Principal Faculty, Myers Lawson School of Construction	
2014-Present	Assistant Professor of Architecture (Tenure Track)	
2006-2014	Lead Instructor: Inside Architecture and Design Program (w D.Dunay and R. Dunay)	
2011-2014	Adjunct Faculty: Center for Design Research, Virginia Tech	
Summer 2009	Instructor: User Assembled Building Systems Workshop	
Fall 2008	Graduate Teaching Assistant: Industrialized Processes: Cologne, Germany	
Summer 2008	Instructor: Digital Design and Manufacturing Workshop	
2008- 2009	Graduate Teaching Assistant: Foundation Design Laboratory (Studio) w/ R.Dunay	
2007- 2008	Guest Instructor: Foundation Design Laboratory (Studio) w/ C.Vorster	
Spring 2008	Graduate Teaching Assistant: Industrialized Processes: Milan, Italy	
Fall 2007	Graduate Teaching Assistant: Furniture Design Laboratory	
2005- 2007	Graduate Teaching Assistant: Second Year Industrial Design Lab. (Studio)	
HARVARD, SCHOOL OF ENGINEERING AND APPLIED SCIENCES (2012)		
January 2012	Instructor: IDEO-SEAS Design Thinking Workshop	
UNIVERSITY OF INNS	BRUCK, Faculty of Architecture (2013-2015) Visiting Assistant Professor: Institute for Experimental Architecture (Fractional)	
RHODE ISLAND SCHOOL OF DESIGN, ARCHITECTURE and FOUNDATION STUDIES (2013-2015)		
2013-2015	Assistant Professor of Architecture: Advanced Design Studio (Dual Appointment)	
2013-2015	Assistant Professor of Foundation Studies: Spatial Dynamics (Dual Appointment)	

INTERNATIONAL WORKSHOPS	
2020	Co-Chair: In Situ Additive Robotic Fabrication of Shell Structures (Print on the Print) RobArch2020; w/ Negar Kalantar CCA; Beijing, China (COVID postponement)
2019	Co-Chair: Parts, Components, Assemblies: Design Automation and the Future of the Building Envelope; at Facades +; w/ Walter P. Moore, Morphosis, and BLD Blocks
2018	Co-Chair: Automated Assembly of Spatial Structures in Constrained Sites RobArch2018; w/ Zaha Hadid Architects, Perkins + Will, and Autodesk; Zurich

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2016	Co-Chair: ACADIA: Multi-species Optimization of Long Span Structures, Michigan
2016	Co-Chair: Dynamo BUILD! RobArch 2016, Sydney, Australia
2016	Co-Chair: Smart Geometry:Log Jam! Multispecies Optimization, Gothenburg, Sweden
2014	Co-Chair: Smart Geometry: Urban Compaction-Full Dome Projections, Hong Kong
2014	Co-Chair: Robotic Fabrication of Phase Change Polymers: ROBARCH 2014
2012	Co-Chair: Gravity Assisted Robotic Casting: ROBARCH 2012, TU Graz
2012	Co-Chair: Smart Geometry: Material Intensities-Ceramics 2.0, Troy, New York
SELECTED UNIVERS	SITY LEADERSHIP AND SERVICE
2022-Present	University Council, Virginia Tech (Elected position)
2018-2020	New Degree Program, Master of Design Studies - School of Architecture +Design, Virginia Tech (Proposal developed)
2018-2020	Deans Leadership Council - School of Architecture +Design, Virginia Tech
2016- Present	Co-Director, Center for Design Research (CDR) - School of Architecture +Design, Virginia Tech
2016- 2017	Steering Committee, Intelligent Infrastructure and Human Centered Communities, (IIHCC) - Virginia Tech (Provost appointment)
2016- 2017	Co-Chair, Research Development Group (IIHCC) - Virginia Tech (Elected position)
2016- 2017	Co-Chair, Facilities Development Group (IIHCC) - Virginia Tech (Elected position)
2016- 2017	University Commission on Research, Virginia Tech (Elected position)
2015-2017	University Advisory Committee, Research Programs and Destination Areas, VT
2015-2017	University Council, Virginia Tech (Elected position)
2015-1017	Commonwealth Consortium for Design and Health, Founding Director, Virginia Tech (w/ UVA)
2013-2015	Glass Robotics Laboratory, Co-Founder, Rhode Island School of Design w/S.Pender

2011-2012 Accreditation Development Committee, Rhode Island School of Design (RISD)

SELECTED RESEARCH

VIRGINIA TECH, SCHOOL OF ARCHITECTURE + DESIGN (2005-Present)

Lead Researcher initiated and conducted independent and group research projects in collaboration with a variety of university students, professors, departments, and industry.

2017-2019 **Tailored Hierarchical Materials for Multifunctional Systems** Next-generation intelligent infrastructure requires increased resilience to damage and increased strength and stiffness for extreme loading conditions, while maintaining minimum weight for energy efficiency and offering multifunctional capabilities (e.g., embedded sensing for connected structural health monitoring and/or adaptive response to

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	environment). To accomplish this goal, the team of 27 trans-disciplinary faculty developed an integrated effort in four research thrust areas across the "atoms to systems" value chain: (i) material synthesis and characterization, (ii) multiscale materials design and modeling, (iii) advanced manufacturing, and (iv) structural design and optimization.
2016- 2018	African Design Center (ADC) (w/MASS Design) (Global Collaboration) By 2050 the population of Africa will double, from 1.2 Billion to 2.5 Billion. This is coupled with rapid urbanization where over 55% of that population will live in cities. The infrastructure required to support healthy and prosperous growth is immense. 85,000 new health clinics, 310,000 primary schools, and 700 million housing units must be built. There is an extreme shortage of trained professionals and even fewer with training in human- centered, sustainable practices. To address this the ADC was developed. In collaboration with MASS Design, produced curriculum and exploration of ways in which ADC can be leveraged to produce infrastructural innovation and local manufacturing capacity in Kigali Rwanda.
2016-2019	Multi-Species Optimization of Long Space Wooden Structures (Global Collaboration) Proposes the application of multispecies optimization techniques through the design, construction, and analysis of a robotically fabricated structures. Through the design, optimization, analysis, assembly, and evaluation of a prototypical multi-species hybrid structure the cluster will uncover new potential for computational design in wood material systems while presenting a microcosm for the broader context of functionally gradient materials in buildings. Collaboration with Walter P. Moore Engineering, Autodesk's AEC Generative Design group, and Autodesk OCTO's Applied Research Laboratory.
2015- Present	Automated Additive Manufacturing and Automation Group The AMACT group develops novel material processes involving Robotic fabrication of large-scale elements through additive processes. The outcome of the groups research will facilitate enhanced access to large format 3D printing suitable for artists and designers thus providing a new outlet for expression and novel opportunities for the realization of complex geometries and systems.
2015-2016	Lo-Fab Pavilion , Boston Greenway During investigation into user assembled building technologies designed and fabricated a structural system allowing rapid on-site assembly, led a group of students in the design and deploy and experimental grid shell on Boston's Rose Kennedy Greenway. The white oak structure was composed of Collaboration with MASS Design Group and the Autodesk BUILD Space.
2008-2009	SEEDS- Pavilion at Hawk's Ridge , Hawke's Ridge Preserve Floyd VA, 2009 During investigation into user assembled building technologies designed and fabricated a structural system allowing rapid on-site assembly, led a group of students in the design and construction of a pavilion in the remote Hawke's Ridge Wildlife Preserve in Floyd Virginia.
2009	Educational Facility , Punta Cana, Dominican Republic. Collaborated on the design and development of a school extension and playground for the Veron Primary School with Professor William Galloway. The playground was constructed in 2009.
2005-2009	Portable Laboratory on Uncommon Grounds (PLUG) , Mahale Tanzania. The PLUG laboratory was designed and constructed on the Virginia Tech campus during thesis research into mobile infrastructural support for field science. The unit was commissioned by the Virginia Maryland College of Veterinary Medicine and was deployed in Tanzania's Mahale Mountain National Park to support Chimpanzee research. PLUG is the first in a series of proposed deployable research infrastructures.
2005-2009	Environmental Systems Laboratory, College of Architecture and Urban Studies Under the direction of Associate Dean for Research, Professor Robert Schubert provided

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support for the reclamation of the college's environmental systems laboratory, provided
equipment training, shop organization, and laboratory support.

- 2006-2007 **Portable Hydrogen Fueling Station**, Virginia Tech College of Engineering The design and fabrication of a portable-localized hydrogen production infrastructure used to support the development of hydrogen-fueled passenger vehicles for the Virginia Tech School of Engineering, with Professor Mike Ellis.
- 2005 **Extreme Makeover: Home Edition,** Virginia Tech School of Architecture The design and construction of a studio building featuring a novel, modular, prefabricated, building system and was constructed as part of the ABC television program, with Professors Robert Dunay and Joe Wheeler.
- 2005 **Furniture Design, 2005 Solar Decathlon**, Virginia Tech (Design and Fabrication) The design and construction of all interior furnishings for the 2005 Virginia Tech Solar Decathlon entry in collaboration with Nick Monday, Nathan Gabriel, and David Clark

RHODE ISLAND SCHOOL OF DESIGN, (2013-2015)

Primary investigator leading the development of several college wide research initiatives and trans-departmental collaborations.

2013-2015 Glass Robotics Laboratory (GRL)

Formed in 2013, the Glass Robotics Lab is a collaboration between Stefanie Pender, faculty within the Division of Foundation Studies and in the <u>Glass Program at the Rhode</u> <u>Island School of Design (RISD)</u>; and Nathan King, Assistant Professor of Architecture and steward of the Design Technology Initiative in the Virginia Tech School of Architecture + Design's <u>Center for Design Research</u>. With the support of RISD, VT, Autodesk, and others the goal of the collaboration is to explore new opportunities for artists, designers, architects, and industry to realize new potential in glass through the lens of computational design and digital fabrication processes. The lab has demonstrated Robotic Glass Blowing, robotically formed molds, and Robot-based 3D printing for glass. GRL has hosted numerous workshops, presented, exhibited, and published internationally.

2013 Fighting Ebola with Design (RISD + Brown University)

Spearheaded by RISD faculty member and MASS director of research Nathan King, and with support from the head of the department of architecture at RISD Laura Briggs, the RISD Office of Partnered Research and Programs, and MASS CEO Michael Murphy, participants collaborated to envision new implementable design solutions that tangibly address challenges facing Ebola healthcare workers, patients, and communities. Teams worked on a variety of challenges, including: 1) deployable contributions to permanent health infrastructure; 2) risk reduction in healthcare workers' dawning and doffing of personal protective equipment; 3) community engagement through radio and SMS messaging; 4) home care kits/In-home personal protective equipment; 5) patient centered infection control; 6) more empathetic and humanizing personal protective equipment for healthcare workers; 7) creating a sense of community at the Ebola Treatment Units; and, finally, 8) furniture for Infection control.

HARVARD UNIVERSITY, GRADUATE SCHOOL OF DESIGN (2009-2014)

Lead Researcher, conduct independent and group research projects in collaboration with Professor Martin Bechthold.

2013-2014 **Composite Ceramic Shell Systems, Design Robotics Group** With a team of students and as a continuation of ongoing research into ceramic material systems the design a custom industrially produced structural ceramic unit, the development of associated automated prefabrication processes, and the eventual construction of a large structural shell, completed in 2014: with Prof. Martin Bechthold and Andreas Trummer (TU Graz)

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2011-2013	WYSS Institute for Biologically Inspired Engineering, Adaptive Materials Group ALivE is a unique multi-disciplinary collaboration between the Wyss Institute for Biologically Inspired Engineering at Harvard University's Adaptive Material Technologies platform and several research groups at the Harvard Graduate School of Design. In collaboration with researchers from the WYSS Institute the design, prototyping, and application of advanced building components using novel mili-fluidic, state-change, pneumatic and hydraulic, materials and technologies. With M. Becthold and A. Sayegh
2009-2013	Ceramic Futures I , Design Robotics Group Leading the design and fabrication of a robotic ceramic deposition system, a robotically actuated variable mold, and coordinated the development of a design-to-manufacturing workflow that allows the realization of complex, custom architectural ceramic components.
2009-2013	Ceramic Futures II , Design Robotics Group Coordinated research focusing on computational pattern generation and tile placement using automated robotic workflow strategies.
2009-2013	Flexible Tooling, Design Robotics Group Leading the development of tooling for low-volume customized fabrication, investigated the potential of low-cost, reusable, robotically actuated, variable formwork that can be used for a variety of material.
2011	Automating Eclipsis: Robotic Fabrication of High-Performance Façade Systems A continuation of research efforts begun at the Virginia Tech Center for Design Research, this project addresses the industrialization of the <i>Eclipsis Dynamic Façade System</i> developed for the <i>LumenHaus</i> modular housing prototype and involves the invention of novel tooling, creation of an automated robotic workflow, and substantial prototyping. An iteration of the system developed is now being installed on the Cornell Technical campus designed by Morphosis on Roosevelt Island in NY, New York.
2011	Robotically Manipulated Formwork, Ann Arbor Municipal Center Initiated in response to the desire to manufacture large format patterns and formwork for use in bronze and concrete casting of a large sculptural intervention at the Ann Arbor Municipal Center.
PATENTS (FULL)	
	Scalable Moment Connection for Modular Building Systems Publication No: US2010/0293869
INVITED LECTURES	
2019	Paradigm Shift: Industry Lecture Series Technologies for Inclusion Napier, New Zealand
2019	Paradigm Shift: Industry Lecture Series Technologies for Inclusion Tauranga, New Zealand
2019	Paradigm Shift: Industry Lecture Series Multiple Lectures: Technologies for Inclusion Hamilton, New Zealand
2019	Paradigm Shift: Industry Lecture Series Multiple Lectures: Technologies for Inclusion Auckland, New Zealand
2019	Government of Zambia – Office of the First Lady; Ministries of Health and Education Lecture: Automated Production of Distributed Health Care Systems

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Boston Society of Architects - Now Practice Now! 2018 Panel discussion on making in design practice American Institute of Steel Construction – Innovation Summit 2018 Panel discussion on automation in steel construction 2018 **AIA Virginia Design Forum** Lecture Title: Tooling for Impact **University of New South Whales** 2016 Lecture Title: Design Technology in Practice Sydney Computational Design Group: BVN Architecture 2016 Lecture Title: Research as Practice University of Innsbruck REX|LAB 2016 Lecture Title: Log Jam! Robotic Fabrication for Wood Material Systems **REAL 2016: Invited Keynote** 2016 Lecture Title: Reality Computing for Resource Limitation Autodesk University, Exhibition Discussion 2015 Lecture Title: Enhancing Local Fabrication through Design Technology Autodesk University, BUILDing the Future Panel 2015 Lecture Title: Automation in Construction through Robotics and Additive Manufacturing Autodesk International xSummit 2015 2015 Lecture Title: New Design Approaches through Local Fabrication, Digital Fabrication, and Collaboration 2015 AIA Virginia, Architecture Exchange East 2015 Lecture Title: Automated Additive Manufacturing in AEC Industries AIA Virginia, Architecture Exchange East 2015 2015 Lecture Title: Building the Future through Design Technology 2015 **Norwich University** Lecture Title: Welcome to the Machine! 2015 Eastern Region Annual Gathering for Haitian Outreach Lecture Title: Building Capacity Through Design in Post-Disaster Haiti AA Visiting School, Winter Robots, University of Innsbruck REX/LAB 2015 Lecture Title: Exploring the Machine Material Interface 2015 Georgia Institute of Technology, Evidence-Based Design in Health Care Lecture Title: Evidence-Based Design in Practice: What is missing? University of Virginia, Innovator in the Practice of Architecture Lecture 2015 Lecture Title: The Practice of Design Robotics Virginia Tech School of Architecture + Design 2015 Lecture Title: Functional Technological Collaboration Harvard Graduate School of Design, Professional Practice Course 2014 Lecture Title: The Pragmatics of Research as Practice (MASS Design) University of Innsbruck, Institute for Experimental Architecture 2014 Lecture Title: Post-rationalizing Research through Design Robotics

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University of Innsbruck, Institute of Structure and Design 2014 Lecture Title: Seeking Precision ... More or Less **Rhode Island School of Design, Department of Architecture** 2013 Lecture Title: Tooling Infrastructure: A merger of Research and Practice 2013 Massachusetts Institute of Technology, Media Lab, Changing Places Group Lecture Title: Automated Manufacturing for Modular Construction Harvard Graduate School of Design, Research as Practice Symposium 2013 Lecture Title: The Convergence of Research in the Academy and Practice. Harvard Graduate School of Design 2012 Lecture Title: Reconciling High Tech | Low Tech: Cholera Treatment Center for Haiti Pennsylvania State University, College of Arts and Architecture 2012 Lecture Title: Approaching Design Robotics Harvard Graduate School of Design 2012 On the Bri(n)k, Lecture Series: three course lectures entitled: Ceramic Materials Systems The Catholic University of America School of Architecture and Planning 2012 Te² Symposium; Lecture Title: Modular Automation Strategies for Robotic Fabrication 2012 Washington Alexandria Architecture Center (WAAC), Alexandria, Virginia Lecture Title: Artifacts of Questions Asked: Design by Prototype Norwich University, CNC Symposium, North Field, Vermont 2012 Lecture Title: Approaching Digital Integration: a Pedagogical Approach Boston Architectural Center, Boston, Massachusetts 2012 Lecture Title: Customizing Ceramics: Robotic Fabrication of Structural Ceramic Systems Harvard Graduate School of Design, Cambridge, Massachusetts 2011 Lecture Title: On Navigating Opportunities: Doctoral Studies at the GSD Rhode Island School of Design, Providence Rhode Island 2011 Lecture Title: Scales of Modularity 2011 Norwich University, Prof. Matt Lutz, North Field, Vermont Studio Lecture: High Performance Robotically Fabricated Ceramic Facades Build Boston, Boston, Massachusetts 2011 Lecture Title: Inventing the Future: The Solar Decathlon and Virginia Tech 2011 Virginia Tech School of Architecture + Design, Blacksburg, Virginia Lecture Title: Deployable Infrastructural Support for Science and Education Virginia Tech School of Architecture + Design, Blacksburg, Virginia 2011 Lecture Title: Portable Laboratory on Uncommon Grounds Virginia Tech Department of Biological Systems Engineering, Blacksburg, Virginia 2008 Lecture Title: Remote Infrastructural Support for Science and Education

ADDITIONAL TRAINING

2015	RIA- Robotics Safety Training International Robotics Industry Association, Pittsburg PA
2015	RIA- Collaborative Robotics Workshop International Robotics Industry Association, Pittsburg PA

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2010-2012	Graduate Consortium on the Environment Harvard University Center for the Environment, Cambridge, MA
2011	Public Interest Design Training Program Harvard University, Graduate School of Design, Executive Education Program, Cambridge, MA
2010	Day Lighting Buildings Harvard University, Graduate School of Design, Executive Education Program, Cambridge, MA
2010	Harvard University Leadership Conference Harvard University, Kennedy School of Government, Cambridge, MA
2005	Summer Academy of Architecture University of Texas at Austin, Austin, TX
2005	Character Development and Animation Workshop Vancouver School of Media Arts (VANARTS), Vancouver, BC, CA

BOOK PUBLICATIONS

Nathan King, "Technologies for Inclusion" in, Ferdous, F., & Bell, B. (2020). All-Inclusive Engagement in Architecture: Towards the Future of Social Change (1st ed.). Routledge. https://doi.org/10.4324/9780367341985

M. Bechthold, a. Kane and N.King "Ceramic Material Systems in Architecture and Interior Design" Birkhauser, De Gruyter Berlin, November 2015

M. Bechthold, N.King and A. Kane "Keramische Bausysteme in Architektur und Innenarchitektur" Birkhauser, De Gruyter Berlin, September 2015.

SCHOLARY PUBLICATIONS

Li, C., Yuan, M., Faircloth, B., Anderson, J., King, N., & Stuart-Smith, R. (2022, October 27). Smart Branching: An Experimental Method for Heterogeneous Branching Networks using Non-planar 3D Printed Clay Deposition. In Hybrids & Haecceities Conference & Proceedings.

Dunaway, D., Rothbart, D., Gwinn, L., King, N., & Stuart-Smith, R. (2022, October 27). Introducing Bespoke Properties to Slip Cast Elements: Designing a Process for Robotically Controlled Rotational Casting. In ACADIA 2022: Hybrids & Haecceities Conference & Proceedings.

Tish, D., King, N. & Cote, N. Highly accessible platform technologies for vision-guided, closed-loop robotic assembly of unitized enclosure systems. Constr. Robot (2020). https://doi.org/10.1007/s41693-020-00030-z

Lewis, Trevor Stephen, et al. "Toward an Automated Robotic Fabrication Workflow for Structurally Optimized Multispecies Wooden Network Shells." Proceedings of IASS Annual Symposia. Vol. 2018. No. 20. International Association for Shell and Spatial Structures (IASS), 2018.

N. King, N.Melenbrink, N.Cote, and G. Fagerstrom. "BUILD-ing the Lo-Fab Pavilion: Dynamo-driven collaborative robotic fabrication workflows for the construction of spatial structures" in Proceedings of the 3rd International Conference on Robots in Architecture, Art, and Design (RobArch), 2016

N. Melenbrink and N. King "Fulldome Interfacing: A Real-time Immersive Environment as a Design Tool" in Proceedings of the 20th Annual Conference on Computer-Aided Computational Design in Asia (CAADRIA), Daegu, Republic of Korea, May 2015.

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N. King, R. Vroman, K. King, and O. Mesa "Innovating Ceramics: Technology, Collaboration, and Pedagogy" in The Journal National Council on Education in the Ceramic Arts (NCECA), NCECA 2015

N. King, J. Grinham, D. Saladik, M. Murphy, and A. Ricks "Crafting Eclipsis: Integrated Computational Design and Automation Through Programmed Craft-Based Fabrication in the Developing World" in Proceedings of the 2014 International ACSA Conference, Seoul Korea, June 2014

N. King, S. Pender, J. Grinham, R. Vroman, and D Clark "Beyond Digital Steroids: a Pedagogical Approach to Foundation Design Through Design Robotics" in Proceedings of the 2014 International ACSA Conference, Seoul Korea, June 2014

N. King. M. Bechthold, A.Kane, P. Michalatos, "*Robotic Tile Placement: Tools Techniques and Feasibility*", in Journal of Automation in Construction.

N.King, M. Bechthold, and A. Kane "Modular Automation Strategies for Robotic Fabrication" in *Fabricating the Future* by Philip F. Yuan and Neil Leach, Tongji University Press, 2012

M. Bechthold and N. King "*Design Robotics: A Strategic Research Approach*", Proceedings of the 2012 Robot In Architecture, Art, and Design Conference; Vienna, Austria, 2012* (*Conference December 2012)

N. King. and J. Grinham "Automating Eclipsis: Robotic Fabrication of Optimized Metal Façade Components", Proceedings of the 2012 Robot In Architecture, Art, and Design Conference; Vienna, Austria, 2012* (*Conference December 2012)

S. Andreani. J.L Garcia del Castillo, A. Jyoti, N. King, and M. Bechthold, *"Flowing Matter: Robotic Fabrication of Tectonic Ceramic Systems"*, Project Presentation, Acadia Conference, San Francisco California, October 2012

N. King. M. Bechthold, A.Kane, P. Michalatos, "*Robotic Tile Placement: Tools Techniques and Feasibility*", Proceedings of the 29th International Symposium on Automation and Robotics in Construction, Eindhoven Netherlands, 2012* (*Conference June 2012)

S. Andreani. J.L Garcia del Castillo, A. Jyoti, N. King, and M. Bechthold, "*Flowing Matter: Robotic Fabrication of Tectonic Ceramic Systems*", Proceedings of the 29th International Symposium on Automation and Robotics in Construction, Eindhoven Netherlands, 2012

M.Bechthold, N.King, A.Kane, J.Niemasz, and C.Reinhart," *Integrated Environmental Design and Robotic Fabrication Workflow for Ceramic Shading Systems*", Proceedings of the 28th *International Symposium* on Automation and Robotics in Construction, Seoul Korea, 2011

T.Kaur, M. Lutz, J Singh, N.King "PLUG: An Interdisciplinary Faculty-Student Collaboration at Virginia Tech", Proceedings from the 2007 Dean's Forum on the Environment, Virginia Tech, 2007

WORK PUBLISHED IN POPULAR PRESS AND OTHER MEDIA

Inverse.com, How a Rendering of Pluto's Sunset Reveals the Algorithmic Future of Architecture, May, 2016. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

The Bellingham Herald, *Cholera Quietly Kills Dozens a Month in Haiti*, David McFadden March 2016. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Le Nouvelliste, A GHESKIO, *l'Innovation combat le cholera*, Alphonse Roberson, Feb. 2016. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

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Architectural Record (Online), *Class Favorites: Best Projects of 2015*, Miriam Sitz, Dec. 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Azure Magazine (Online), *The 10 Best Buildings of 2015*, Dec. 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Azure Magazine, *Wellness by Design: Disease-Fighting Architecture*, David Dick-Agnew. 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Revista AU (Magazine feature) MassDesign projeta Centro de tratamento do cólera no Haiti, com ventilação iluminação naturais e sistema de tratamento de água, Rafael Urano Frajndlich. 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Fast Company, *The 2015 Innovation by Design Awards Winners: Social Good*, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Colorado Springs Independent, *MASS Effect: Can a Building Catalyze Social Chance? Lo-Fab says Yes*, Miguel, Bustamante. 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Mark magazine, Cleaning Up: MASS Design Group Build a Hospital for Cholera Patients Atop a Water Treatment (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Facility in Port-au-Prince, Lauren Grieco, 2015. (Gheskio Cholera Treatment Center, Portau Prince Haiti)

Design Milk, *Friday at Five with Burkelman*, Caroline Williamson, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Curbed, Slow Food for the Built Environment: MASS Design Group on How to Improve Relief Architecture, Patrick Sisson, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Architectural Record, *The Water Cure: A Small Project with a Big Program Sets a Holistic Design Standard for Health Care in Haiti*, Linda Lentz, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Harvard Design Magazine, *In Search of a Water Pump: Architecture and Cholera*, Michael Murphy, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

ArchDaily, *#LoFAB: MASS Design Group's Campaign for Local Building*, Rory Stott, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

World-Architects, *The Lo-Fab Movement*, John Hill, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Architectural Record (Online), *Bill Clinton Delivers Keynote Address at AIA Convention*, Ana Fixen, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Architect Magazine (Online), *Design Biennial Boston Recognizes City's Emerging Designers*, Caroline Massie, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Town and Country (Online), *Philanthropy 2015, with Activist-in-Chief Bill Clinton*, Klara Glowczewska, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Wired (Online), *A Building to Solve Haiti's Cholera Problem*, Liz Stinson, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

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American Architects, *Building of the week: GHESKIO Cholera Treatment Center*, John Hill 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Architectural Digest Blog, *Innovator MASS Design Group Has Erected Two Medical Centers in Haiti*, Hannah Martin, 2015. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

ArchDaily, *Kimmelman on MASS Design Group;s Open-Air Clinics in Haiti*, Michael Kimmelman, 2014. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

Architects News (Online), *MASS Design Group's new Open-Air Clinics in Haiti*, reviewed by Michael Kimmelman, Michael Kimmelman, 2014. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

New York Times, Feature: *In Haiti, Battling Disease with Open Air Clinics*, Michael Kimmelman, 2014. (Gheskio Cholera Treatment Center, Port-au Prince Haiti)

EXHIBITIONS

2023	. Ceramic Material Systems (No. Of Pieces: 180 Pieces of Student work) [Clay-Based Ceramics]. Harvard University, Office of The Arts, Cambridge MA
2022	Digital Material Systems , with Zach Seibold and Kathy King, Harvard Office of The Arts; Cambridge, MA
2020-2021	Justice is Beauty , with MASS Design Group and VT Center for Design Research; National Building Museum; Washington D.C
2019	Prototypes. International Contemporary Furniture Fair (ICFF); New York, NY. (Design exhibition with Robert Dunay and students)
2019	Cevisama, International Ceramics Trade Show, Valencia Spain (Research Exhibition of student work)
2019	Collaboration and Automation in Ceramics, Harvard University, Cambridge MA (Exhibition of student work)
2017	From These Woods, Moss Arts Center, Blacksburg, Virginia
2017	Smithsonian Creativity and Innovation Festival, Smithsonian, Washington D.C
2017	Technology and Tradition , International Contemporary Furniture Fair, New York, New York (Exhibition and Furniture Design)
2016	Landings, Randolph-Macon College, Ashland Virginia (Design Exhibition; with Robert Dunay and students)
2015	Research as Pedagogy , Architecture Exchange East (Design Exhibition; with Robert Dunay and students)
2015	MASS Lo-Fab, Robotically Fabricated Grid Shell Design Boston Biennial (Installation; Rose Kennedy Greenway, Boston Ma; with MASS Design and Vt-CDR)
2015	The Technology is in the Aesthetic , International Contemporary Furniture Fair (ICFF) (Design Exhibition, with Robert Dunay and David Clark with students)
2014	Innovating Ceramics, Harvard Ceramics Gallery, Cambridge, Massachusetts (Design Exhibition; with Rachel Vroman and our students.)

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- Tooling Infrastructure, BEB Gallery, Providence Rhode Island 2013 (Design Exhibition; with Marcus Shaffer and our students) Approaching Transformable Design, Gund Hall Lobby, Cambridge, Massachusetts 2013 (Design Exhibition; with Chuck Hoberman and our students) 2012 House of The Future, International Contemporary Furniture Fair, New York, New York (Virginia Tech Research Exhibition; with D.Clark, R. Dunay, J. Wheeler, etal.) Ceramic Futures, Cevisama 2012, International Trade Show, Valencia Spain 2012 (Research Exhibition; with M.Bechthold, A. Kane, and A. Lee.) Data Materialized: A Visualization of Demographics in Washington D.C. 2011 Intelligent Cities Competition, National Building Museum, Washington D.C. (With K. Bennett, G. Talirico, and J. Zawistowski) Ceramic Futures, Gund Lobby, Harvard GSD, Cambridge Ma. 2011 (Research Exhibition; with M.Bechthold, A. Kane, C. Reinhart et al.) Exhibition La geometría en la cerámica Colegio Oficial de Arquitectos de Madrid, 2010 Madrid, Spain Industrialized Process: A Prototyped Exhibition, International Contemporary Furniture 2009 Fair, New York, New York (Exhibition and Furniture Design)
- 2009 Cologne International Furniture Fair: Cologne, Germany (Exhibition and Furniture Design)
- 2009 **Niue Ziel String Quartet:** Armory Gallery, Blacksburg, Virginia (Kinetic Sculpture installation; with Morgan Sayers; critic Theo Jansen)
- 2008 Milan International Furniture Fair, Salone Satellite: Milan, Italy (Exhibition and Furniture Design)
- 2008 Accreditation Exhibition: Cowgill Hall Rooms 100 and 400, Virginia Tech (Exhibition and Furniture Design; With R.Dunay, J.Wheeler, and D.Clark)
- 2005 Deployable Building Systems, Cowgill Hall, Blacksburg, Virginia
- 2005 **Portable Laboratory on Uncommon Grounds**, Inn at Virginia Tech (Deans Forum on The Environment)
- 2002 **Resume, Résumé,** Flippo Gallery: Ashland, Virginia (Designer, Curator, and Group Sculpture Exhibition)
- 2002 A Time In Place: Large Format In-Situ Landscape Painting, Pace Gallery, Ashland VA (Thesis Exhibition: Randolph-Macon College)

SYMPOSIA, LECTURE SERIES, and ORGANIZATIONS

2017	International Impact Design Summit: The Practice of Impact Design (Chair) Virginia Tech School of Architecture + Design; National Building Museum
2015-Present	Design<i>IMPACT Lecture Series</i> Virginia Tech School of Architecture + Design
2015-Present	Design <i>TECH Lecture Series</i> Virginia Tech School of Architecture + Design

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April 2013	Research as Practice: A Convergence of Didactic Ideals Harvard graduate School of Design, Conference, Co-Chair, April 2013
2012-Present	Commonwealth Fabrication Consortium, University of Virginia and Virginia Tech Founding Director
2011-2012	FWD Talks, A lecture series at intersection of design, technology, and policy Co-Chair, with D. Papanikolaou, A. Payne, and M.Mayer, Harvard GSD

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