Joshua D. Bard

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Education

2007	Master of Architecture, Graduation with Distinction
	Taubman College of Architecture and Urban Planning, University of Michigan, Ann Arbor, MI

2002	Bachelor of Arts; majors in literature and philosophy, minor in German
	Wheaton College, Wheaton, IL

Academic Appointments

School of Architecture, Carnegie Mellon University

2012–Present	Assistant Professor in Architecture

Taubman College of Architecture and Urban Planning, University of Michigan

2011–2012	Lecturer III in Architecture
2007–2010	Lecturer I in Architecture
2007–2011	Director, Summer Institute for International Students
2007–2008	Coordinator, Digital Fabrication Laboratory

Courses

	Carnegie Mellon University	Course Num.	Units	Students
2016–2017	Generative Modeling	CFA 62-225	09	54
	IDeATe Collaborative Studio: *Human-Machine Virtuosity*	CS 16-455	12	09
	Undergraduate Design Studio: *Timber*	Arch 48-510	18	12
	Undergraduate Design Studio: *Grow Collective,* Coordinator	Arch 48-200	18	55
2015–2016	Generative Modeling	CFA 62-225	09	47
	Undergraduate Design Studio: *Timber*	Arch 48-510	18	12
	Undergraduate Design Studio: *Grow Collective,* Coordinator	Arch 48-200	18	46

2014–2015	Scripting	Arch 48-724	06	06
	Parametric Modeling	Arch 48-624	06	10
	IDeATe Collaborative Studio: *Human-Machine Virtuosity*	CS 16-455	12	14
	Undergraduate Design Studio: *Timber*	Arch 48-510	18	09
	Undergraduate Design Studio: *Grow Collective,* Coordinator	Arch 48-200	18	44
2013–2014	Scripting	Arch 48-724	06	06
	Parametric Modeling	Arch 48-624	06	10
	Robotic Fabrication: *Material Affordance in digital design*	Arch 48-530	12	05
	Undergraduate Design Studio: *Timber*	Arch 48-510	18	09
	Undergraduate Design Studio: *Grow Collective,* Coordinator	Arch 48-200	18	43
2012–2013	Robotic Fabrication: *Material Affordance in digital design*	Arch 48-530	12	07
	Undergraduate Design Studio	Arch 48-205	18	10
	Undergraduate Design Studio	Arch 48-200	18	10

	The University of Michigan	**Course Num.**	**Units**	**Students**
2011–2012	Digital Fabrication: *Applied Research Collective*	Arch 507	18	06
	Geometric Modeling	Arch 421	12	14
	Undergraduate Design Studio	Arch 312	18	12
	Digital Drawing	Arch 211	12	40
2010–2011	Digital Fabrication: *Youth Hostel Detroit*	Arch 507	18	09
	Graduate Design Studio	Arch 422	18	12
	Design Fundamentals	Arch 416	12	27
	Undergraduate Design Studio	Arch 312	18	12
	Digital Drawing	Arch 211	12	34
2009–2010	Digital Fabrication: *All Bent Out...*	Arch 507	12	08
	Graduate Design Studio	Arch 422	18	11
	Geometric Modeling	Arch 421	12	13
	Design Fundamentals	Arch 416	12	32
	Undergraduate Design Studio	Arch 312	18	12
	Digital Drawing	Arch 211	12	43
2008–2009	Graduate Design Studio	Arch 422	12	12
	Design Fundamentals	Arch 416	12	35
	Undergraduate Design Studio	Arch 312	12	12
	Digital Drawing	Arch 211	12	28
2007–2008	Architectural Theory + Criticism	Arch 572	12	12
	Digital Drawing	Arch 211	12	54

Research Grants

2016   *Tooled Deposition of HighPerformance Building Components for PostProcessing of 3D printed Architectures.*, PI
Manufacturing Futures Initiative, Carnegie Mellon University
With Dana Cupkova co-PI, Garth Zeglin and Newell Washburn Collaborators
$149,361

2016   *Through Thick and Thin: Recovering the Craft of Architectural Plaster*, PI
College of Fine Arts(CFA) Fund for Research and Creativity, Carnegie Mellon University
With Richard Tursky co-PI
$19,255

2014	*Human Machine Virtuosity: building bridges for accelerated digital-physical iteration*, PI
	Integrative Design, Arts, and Technology (IDeATe), Carnegie Mellon University
	With Garth Zeglin co-PI
	$25,000

2013	*Human Machine Virtuosity: building bridges for accelerated digital-physical iteration*, PI
	Integrative Design, Arts, and Technology (IDeATe), Carnegie Mellon University
	With Garth Zeglin co-PI
	$25,000

2013	*Robotic Gestures: Learning Expressive Motion Through Feedback and Self Evaluation in Throwing tasks*, PI
	Frank-Ratchye Fund for Art@the Frontier
	Studio For Creative Inquiry, Carnegie Mellon University
	With Ali Momemi co-PI
	$6,410

2013	*Plaster Cast: Reanimating Historical Architectural Pedagogy Using Contemporary Digital Tools*, PI
	Ferguson Jacobs Prize
	School of Architecture, Carnegie Mellon University
	$5,000

2013	*Soft Procedures: the Body's Paradigm in Industrial Robotics and Architectural Fabrication*, PI
	Margaret B. Gruger Faculty Fund
	Carnegie Mellon University
	$5,000

2012	*Morphfaux: Recovering Plaster as Architectural Substrate*, PI
	Berkman Faculty Development Fund
	Carnegie Mellon University
	$5,000

2011	*Applied Research Collective*, PI
	North Campus Research Complex
	University of Michigan
	With Matthew Schulte, Erik Hofer (Office of Enabling Technologies, UofM Medical School), co-PIs
	$60,000

2011	*Morphfaux: Recovering Plaster as Architectural Substrate,* PI
	Office of the Vice President for Research
	University of Michigan
	With Steven Mankouche, Matthew Schulte, co-PIs
	$15,000

2011	*Morphfaux: Recovering Plaster as Architectural Substrate,* PI
	Research Through Making Grant
	Taubman College of Architecture and Urban Planning
	With Steven Mankouche, Matthew Schulte, co-PIs
	$20,000

2011	*Youth Hostel Detroit* (pilot course)*,* PI
	Lecturers' Employee Organization, Professional Development Fund
	University of Michigan
	With Matthew Schulte, co-PI
	$550

2011	*Youth Hostel Detroit* (pilot course), PI
	Center for Research on Learning and Teaching, Instructional Development Fund
	University of Michigan
	With Matthew Schulte, co-PI
	$500

2010	*Springback* Exhibition, PI
	College Research Fund
	Taubman College of Architecture and Urban Planning
	With Steven Mankouche, Matthew Schulte, co-PIs
	$3,600

2010	*Springback* Exhibition, PI
	Office of the Vice President for Research
	University of Michigan
	With Steven Mankouche, Matthew Schulte, co-PIs
	$5,000

2009	*Digital Steam Bending* , PI
	Office of the Vice President for Research
	University of Michigan
	With Steven Mankouche, co-PI
	$12,000

2009	*Digital Steam Bending*, PI
	Research Through Making Grant
	Taubman College of Architecture and Urban Planning
	With Steven Mankouche, Tsz Yan Ng, co-PI
	$20,000

2009	*Ceramic Origami*, PI
	Center for Research on Learning and Teaching, Lecturer Development Fund
	University of Michigan
	$2,000

Awards

2013	R+D First Award
	Morphfaux
	Architect magazine
	With Steven Mankouche, Matthew Schulte

2011	Honorable Mention
	Springback
	ACSA Faculty Design Award
	With Steven Mankouche, Matthew Schulte

2011	Merit Winner
	Springback
	2010 Wood Design Awards Competition
	Canadian Wood Council
	With Steven Mankouche, Matthew Schulte

2010   R+D Award
Digital Steam Bending: A Parametrically Adaptable Structural System
Architect magazine
With Steven Mankouche, Matthew Schulte

2010   Design Citation
Civic Bend
Unbuilt Architecture Design Award
Boston Society of Architects (BSA)
With Steven Mankouche, Matthew Schulte

2007   Recipient
Alpha Rho Chi Medal
Taubman College of Architecture and Urban Planning
University of Michigan

2004–2007   Recipient
Taubman College Henderson Scholarship
Taubman College of Architecture and Urban Planning

2006   Member, winning student team
P3: People Prosperity Planet
United States Environmental Protection Agency

2005   Recipient
Design Studio Scholarship Award
Taubman College of Architecture and Urban Planning

Exhibits / Installations

2012   *Research Through Making*, Liberty Research Annex
Taubman College of Architecture and Urban Planning, University of Michigan
Ann Arbor, MI

2011   *Springback*, Matthaei Botanical Gardens
University of Michigan
Ann Arbor, MI

2010   *Springback*, Frederick Meijer Gardens and Sculpture Park
Art Prize
Grand Rapids, MI

2010   *Civic Bend*, Unbuilt Architecture Design Awards
Boston Society of Architects (BSA)
Boston, MA

2010   *Research Through Making*, Architecture Gallery
Taubman College of Architecture and Urban Planning, University of Michigan
Ann Arbor, MI

2007   *Thesis Exhibition*, Architecture Gallery
Taubman College of Architecture and Urban Planning, University of Michigan
Ann Arbor, MI

2006   *P3: People Prosperity Planet*, National Mall
United States Environmental Protection Agency
Washington, DC

Publications

2016   Bard, Joshua, Blackwood David, Sekhar Nidhi, Smith, Brian. *"Reality is interface: Two motion cap
ture case studies of human–machine collaboration in high-skill domains."* In International Journal
of Architectural Computing, edited by Bob Martens and Gabriel Wurzer. Volume: 14 issue:
4, Sage Publising 2016: 398-408.

2016   Bard, Joshua, Tursky Richard, Jeffers Michael. *"RECONstruction: A survey of scanning techniques for
the surface description of architectural substrates in robotic assembly.."* In Rob|Arch: Robotic Fabri
cation in Architecture, Art, and Design, edited by Dagmar Reinhardt, Rob Saunders, Jane Burry. NY:
Springer, 2016: 262-273.

2015   Bard, Joshua, Blackwood David, Sekhar Nidhi, Smith, Brian. "Decorative Robotic Plastering: A Case
Study of Real-Time Human Machine-Collaboration in High-Skill Domains". *Real Time - Proceedings
of the 33rd eCAADe Conference - Volume 2*, Martens, B, Wurzer, G, Grasl T, Lorenz, WE and Schaf
franek, R (eds.), 383-388. Austria, 2015.

2014   Schwartz, Thibault, Joshua Bard, Madeline Gannon, et al. "All Bent Out…Adaptive Fabrication of
Bent Wood Assemblies." *In Rob|Arch: Robotic Fabrication in Architecture, Art, and Design*, edited
by Wes McGee and Monica Ponce de Leon, 305-318. NY: Springer, 2014

2014   Bard, Joshua, Madeline Gannon, Zachary Jacobson-Weaver,et al. "Seeing is Doing: Synthetic Tools
for Augmented Fabrication in High-Skill Domains." In *Design Agency: Proceedings of the 34th
Annual conference of the Association for Computer Aided Design in Architecture (ACADIA)*, edited by
David Gerber, Alvin Huang and Jose Sanchez, 409-416. CA: Riverside Architecural Press, 2014.

2014   Fink Shapiro, Gideon. "First Award: Morphfaux." *Architect* July 2013: 98-104.

2013   Schulte, Matthew, Steven Mankouche, Joshua Bard. "Morphfaux: Recovering Plaster by Developing
Custom Robotic Tools." In *Rob|Arch: Robotic Fabrication in Architecture, Art, and Design*, edited by
Sigrid Brell-Cokcan and Johannes Braumann, 138-141. Austria: Springer, 2013.

2012   Schulte, Matthew, Steven Mankouche, Joshua Bard. "Digital Steam Bending: Re-Casting
Thonet Through Digital Techniques." In *Synthetic Digital Ecologies: Proceedings of the 32nd Annual
conference of the Association for Computer Aided Design in Architecture (ACADIA)*, edited by Mark
Cabrinha, Jason Kelly Johnson and Kyle Steinfeld, 117-126. WI: The Printing House Inc, 2012.

2012   Schulte, Matthew, Steven Mankouche, Joshua Bard. "Morphfaux: Probing the Proto-Synthetic
Nature of Plaster Through Robotic Tooling." In *Synthetic Digital Ecologies: Proceedings of the 32nd
Annual conference of the Association for Computer Aided Design in Architecture (ACADIA)*, edited by
Mark Cabrinha, Jason Kelly Johnson and Kyle Steinfeld, 177-186. WI: The Printing House Inc, 2012.

2011   Schulte, Matthew, Steven Mankouche, Joshua Bard, and Tsz Yan Ng. "Digital Steam Bending: Re-
Casting Historical Craft Through Digital Techniques." In *Considering Research: Reflecting on Current
Themes in Architectural Research*, edited by Philip Plowright and Bryce Gamper, 269-280. Detroit:
Lawrence Tech, 2011.

2011   "Merit Awards: *Springback.*" In *Celebrating Excellence in Wood Structures: 2010-11 North American
Wood Design Award Winners,* edited by Bernadette Johnson, 49-51. Ottawa: Canadian Wood
Council, 2011.

| 2010 | Gerfen, Katie. "Research and Development Awards: Digital Steam-Bending: Developing a Parametrically Adaptable Wishbone Structural System." *Architect* July 2010, 52-55 and cover. |

| 2008 Christian | "Entering the Fold: Surface Tactics and Spatial Tact." In *Dimensions Twenty-One*, edited by Unverzagt, 34-41. Ann Arbor: The University of Michigan, 2008. |

Lectures / Presentations

2016
Material Affordance in Robotic Fabrication
Design Charrette: *David Lawrence Convention Center*, Pittsburgh, PA

2015
Decorative Robotic Plastering: Real-Time Human Machine-Collaboration in High-Skill Domains
Paper Presentation: *Real Time, eCAADe 33rd conference*, Vienna, Austria

2015
Expressive Interactive Surfaces
Project Presentation: *SXSW Interactive Festival*, Austin, TX
With Carmel Majidi, Evan Shimizu, Madeline Gannon, Illah Nourbakhsh

2014
All Bent Out…Adaptive Fabrication of Bent Wood Assemblies
Workshop Presentation: *Rob|Arch 2014*, Robotic Fabrication in Architecture, Ann Arbor, MI
With Thibault Schwartz

2013
Seeing is Doing: Synthetic Tools for Augmented Fabrication in High-Skill Domains
Paper Presentation: *Design Agency*, ACADIA 2014, Los Angeles, CA
With Madeline Gannon

2013
Beyond Function: New Paradigms in Robot Human Interaction
Paper Presentation: *[En]coding Architecture*, CMU School of Architecture, Pittsburgh, PA
With Illah Nourbakhsh, Robotics Institute

2013
Pliant: Material Intelligence in Digital Fabrication
Presentation of Work: CAAD *Design Week*, American University of Sharjah, Sharjah, UAE

2012
Morphfaux: Recovering Architectural Plaster by Developing Custom Robotic Tools
Project Presentation: *Rob|Arch 2012*, Robotic Fabrication in Architecture, Vienna, Austria

2012
Morphfaux: Probing the Proto-Synthetic Nature of Plaster Through Robotic Tooling
Paper Presentation: *Synthetic Digital Ecologies*, ACADIA 2012, San Francisco, CA

2012
Digital Steam Bending: Recasting Thonet Through Digital Techniques
Paper Presentation: *Synthetic Digital Ecologies*, ACADIA 2012, San Francisco, CA

2012
Morphfaux: Re-siting modular construction through robotic manufacturing
Paper Presentation: *Offsite*, ACSA 2012, Philadelphia, PA

2012
Hostel Detroit: Fabrications in Architecture
Paper Presentation: *Offsite*, ACSA 2012, Philadelphia, PA

2012
Morphfaux: Recovering Plaster as Architectural Substrate
Keynote address: *Whither Installation* Symposium, Taubman College, University of Michigan

2010
Pliant: Experiments in Material Deformation
Presentation of Work: *PechaKucha* Detroit Volume 7, The Henry Ford Museum, Dearborn, MI

2009
Paper or Plastic?
Presentation of Work: Faculty Practice Series, Taubman College, University of Michigan

Workshops

2016   *Techno-Tectonics*
        With Richard Tursky: *Forge,* AIAS Northeast Quad Conference, Pittsburgh, PA
        Funded by the American Institute of Architecture Students, 15 participants

2014   *All Bent Out...*
        With Thibault Schwartz, Richard Tursky: *Rob|Arch 2014*, Association for Robotics in
        Architecture, Pittsburgh, PA
        Funded by the Association for Robotics in Architecture, 07 participants

2013   *Introduction to Robots in Architecture*
        With Jeremy Ficca: *[En]coding Architecture*, Carnegie Mellon School of Architecture,
        Pittsburgh, PA
        Funded by Carnegie Mellon School of Architecture, 10 participants

2013   *Complex Material Arrays: Wood Construction Using Robotic Assembly*
        With Richard Tursky: CAAD *Design Week*, American University of Sharjah, Sharjah, UAE
        Funded by the American University of Sharjah, 12 participants

Invited Reviews

2016   Ball State University, College of Architecture and Planning, Muncie, IN, Graduate Studio.

2015   University of Michigan, Taubman College of Architecture and Urban Planning, Ann Arbor, MI,
        Graduate Thesis.

2014   University of Michigan, Taubman College of Architecture and Urban Planning, Ann Arbor, MI,
        Master of Science in Digital Technologies capstone projects.

2014   University at Buffalo, School of Architecture and Planning, Buffalo, NY, Graduate Studios.

Service

2017   Paper Reviewer for TAD the Journal of Technology, Architecture, and Design.

2016   Paper Reviewer for Posthuman Frontiers, ACADIA 2016 Conference

2015–2016   Alternate Board Member Association for Computer Aided in Design (ACADIA)

2014   Advisory Board Member Rob|Arch 2014 Conference

2014–Present   Track Chair of Computational Design in Undergraduate Curriculum

2014   Co-Chair Computational Design Committee, Presidential Advisory Board visit.

2013–present   Member, Intelligent Environments curriculum development committee, Integrative Design,
        Arts, and Technology (IDeATe)

2012–2017   BArch, MAAD, MArch, MSCD Portfolio Reviews

2011   Member, NAAB Accreditation Exhibit Committee, University of Michigan

Professional Experience

2007–2012   Designer, JDBard Design, Ann Arbor, MI

Summer 2008   Intern, M1/dtw, Detroit, MI

2005–2007   Intern, PLY Architecture, Ann Arbor, MI (intermittent)

2006   Project Manager, TCAUP Building Design Workshop, Ann Arbor, MI

Professional Licensure / Membership

Architectural License (ARE 3/7 complete)

2012–present   Member, Association for Robotics in Architecture

2012–present   Member, Association for Computer Aided Design in Architecture (ACADIA)

2003–2006   Licensed Builder in the State of Michigan

Projects

2011   600 Davis, design, residential remodel, Ann Arbor, MI

2010   Quiring Residence, design and fabrication, restoration & built-in furniture, Okemos, MI

2009   Dill Residence, design, addition and renovation, Newtown Square, PA

2008   Bowen Residence, design, addition and renovation, Wilmette, IL

2008   DocLounge, design and fabrication, interior renovation, Ann Arbor, MI (with M1/dtw)

2007   Windridge Residence, schematic design, new home construction, Chadds Ford, PA

2007   Choice Dental Center, fabrication, built-in furniture, Ann Arbor, MI (with PLY Arch)

2005   Taubman College Media Center, design and fabrication, built-in furniture, Ann Arbor, MI