

SYMPOSIUM  
Feb. 1-3, 2018

# ATMOSPHERE 10

## FABRICATIONS

Faculty of Architecture, University of Manitoba



Presenter Abstracts

# Symposium Fabricators

## Co-Chairs

Lisa Landrum, Associate Dean Research, Associate Head & Associate Professor

Liane Veness, C.A.S.T. Coordinator & Part-Time Instructor

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## with valuable support from

Tali Budman, ED4-Architecture Option Student (web and graphics)

Brandy O'Reilly, Faculty of Architecture Partners Program (communications)

Rob Freeman, Faculty of Architecture Partners Program (communications)

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## CULTURAL EVENTS COMMITTEE

Marcella Eaton, Dept. of Landscape Architecture    Tijen Roshko, Dept. of Interior Design

Orly Linovski, Dept. of City Planning    Kim Wiese, Environmental Design Program

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## OTHER Faculty Support

Lancelot Coar, Dept. of Architecture (C.A.S.T.)    David van Vliet, Dept. of Landscape Architecture

Dietmar Straub, Dept. of Landscape Architecture (C.A.S.T.)    Jae Sung-Chon, Environmental Design Program

Alan Tate, Dept. of Landscape Architecture    Neil Minuk, Dept. of Architecture

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## EXTERNAL PEER REVIEWERS

Peter Goché Assistant Professor, Iowa State University School of Design

Ufuk Ersoy, School of Architecture, Clemson University

Jonathan Foote, Associate Professor, Aarhus School of Architecture, Denmark

Tracey Eve Winton, Associate Professor, School of Architecture, University of Waterloo

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## Faculty of Architecture FABLab

Jason Hare & Kim Wiese

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## STUDENT ASSISTANCE

Connery Friesen, ED4-Arch (installations)    Janine Kropla, ED3-Arch (photography)

Steven Hung, M2-Arch (installations)    Jessica Piper, ED4-Arch (installations)

Dylan Hewlett, ED4-Arch (photography)    Andrew Simonson, ED4-Arch (installations)

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## STUDENT AMBASSADORS

Kara Boboski    Andrea Doussis    Medeleine Dafoe

Eugenia Amoako    Katelynn Schutz    Leah Komishon

Marina Herscovitch    Rachel Teichroew    Sulah Kim

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## ICE BAR

Michael Butterworth, M.Arch Grad 2017

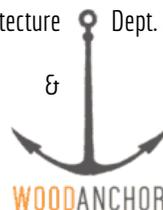
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## FINANCIAL ASSISTANCE

Faculty of Architecture Endowment Fund

University of Manitoba Travel and Scholarship Fund

Faculty of Architecture    Dept. of Architecture



# ATMOSPHERE 10

Since 2009 the Faculty of Architecture at the University of Manitoba has hosted an annual symposium entitled Atmosphere. This event is an interdisciplinary research forum intended to explore the ephemeral, experiential and situational conditions of our shared world. Difficult to pin-down, capture and express, “atmosphere” is enveloping yet recessive. It is what we as designers and interpreters of the built and natural environment strive to understand, generate and meaningfully engage.

The annual Atmosphere Symposium brings together researchers, designers and distinguished keynote speakers from around the world. It also gathers students and professors from the five allied disciplines within our Faculty (Architecture, City Planning, Environmental Design, Interior Design and Landscape Architecture); as well as colleagues from other units across the University (including Engineering and Arts); and representatives from Winnipeg’s local arts communities and professional associations. The three-day symposium includes invited lecturers, peer-reviewed presentations, exhibitions, student installations, receptions, and numerous casual opportunities for serious exchange.

Each year the Atmosphere Symposium poses a specific yet open-ended theme to draw researchers into a topically oriented discourse. The theme for Atmosphere 10 is FABRICATIONS.

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## PAST SYMPOSIA

Atmosphere 9 [2017]	Beauty Memory Entropy
Atmosphere 8 [2016]	Water
Atmosphere 7 [2015]	Emergence
Atmosphere 6 [2014]	Action
Atmosphere 5 [2013]	Ecology & Design
Atmosphere 4 [2012]	Experiencing the Everyday
Atmosphere 3 [2011]	Mediated Cities
Atmosphere 2 [2010]	Uncharted
Atmosphere 1 [2009]	Open

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[W]hat guides the work of fabrication is outside the fabricator...

- Hannah Arendt, *The Human Condition* [1958] (Chicago: University of Chicago Press, 1998), 140.

From the very beginning of time, the ability to extend one's corporeality  
(and therefore to alter one's own natural dimensions) has been the very condition of *homo faber*.

- Umberto Eco, *The Open Work* (1962), trans. Anna Conconi. (Cambridge, MA: Harvard University Press, 1989), 132.

[I]magination is 'productive' not only of unreal objects, but also of an expanded vision of reality.

Imagination at work – in a work – produces itself as a world.

- Paul Ricoeur, "The Function of Fiction in Shaping Reality," *Man and World* 12 (1979): 128.

[T]echnology is best understood by making; sequence is best understood when there is little time;

teamwork is learned quickly when there is too much to do;

topography is most apparent when we set the height of the platform.

- Bryan McKay Lyons, *Ghost: Building an Architectural Vision* (New York: Princeton Architectural Press, 2008), 138.

Technique, spoken in poetry, brings us to architecture.

- Auguste Perret in Karla Britton, *Auguste Perret* (London: Phaidon, 2001), 213.

[The architect's knowledge] is born out of *fabrica* and *ratiocinatione* [making and reasoning  
–the conjoined work of the hand and the mind].

- Vitruvius, *de architectura*, 1.1.1

[T]here is no fabric without the union of contraries, without the harmony of opposing elements.

- John Scheid & Jesper Svenbro, *Craft of Zeus*, trans. Carol Volk (Cambridge, MA: Harvard University Press, 1996), 47.

Within modern architecture, functionalism is a fiction – fiction in the sense of error.

I wish to incorporate function within a richer notion of fiction – that of storytelling.

- Stanford Anderson, "The Fiction of Function," *Assemblage* 2 (Feb. 1987): 20.

[T]he true (*verum*) and the made (*factum*) are interchangeable...

only what has been made can be known in truth...

- Giambattista Vico, *On the Most Ancient Wisdom of the Italians* (*De antiquissima Italorum sapientia*, 1710), A 1.1-3.

# FABRICATIONS

ATMOSPHERE 10 explores *Fabrications*. Fabrications implicate diverse artifacts and modes of making, together with the places, practices, contingencies and intentions that enable and contextualize making. In other words, this symposium will examine not simply what, how and why we make, but sites and situations of making. The aim is to explore how cultural and environmental circumstances become meaningful catalysts of design, building, teaching and research. This theme encompasses manifold concerns beyond the digital: complexities of urban and social fabrics; intricacies of environmental skins; potentials of building sites and workshops; as well as the stories and arguments through which we craft shared understandings of our fabricated world.

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## Social Fabrics

Society has long been conceptualized as a great tangle of human affairs in need of careful unraveling and fine re-stitching. Aristophanes and Plato employed this metaphor of weaving social cohesion at a time when the experiment of democracy was becoming dangerously frayed. More recently, the *topos* describes a city's dense and fibrous web of interweaving events. This session seeks inquiries into material configurations of social interaction and exchange. Topics may cover the intertwining of modern and historic fabrics; patchworks of development; and the interlacing of shifting global cultures with indigenous ways of life.

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## Mediating Fabrics

Wall assemblies and finishes are increasingly conceived as scintillating surfaces and performatively enhanced skins. This session probes the substantive thickness and interstitial depth of enclosures, which mediate the differences, overlaps and interactions of inner and outer worlds. Papers may push this envelope by unfolding reciprocities of tectonic assemblies and social practices; by revealing how industrially-produced artifacts are adjusted to specificities of place and program; and by exploring expressive attributes of wall assemblies, or the so-called 'fiction of function' in modern architecture.

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## Fabricating in situ

This session invites examination of inhabitable sites and situations of making. The aim is to study how particular places and cultural circumstances serve as meaningful catalysts for fabrication, while cultivating a collective sense of place in the world. Papers may explore various scales and terrains: desktops, workshops, building sites, and regional topographies. Topics may include: the agency of context; the reciprocity between sites of production and sites of realization; and design-build projects enacted as collaborations of makers, materials, and milieux.

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## Fabricating Truth

As with any art, poetic fiction does not oppose reality, but augments and transforms it. Narrative fabrications, however fabled and fabulous, can make profound aspects of the human condition more intelligible, palpable and interpretable. This session pursues truth as a synthetic construct beyond mere facticity. Papers may explore the interdependent arts of storytelling and building; the productive agencies of language and metaphor; epistemological fabrications bearing on how we construe and construct the human world; as well as ways in which built environments participate in (re)making symbolic order.

# Schedule

## Thursday, February 1

- 4:30 Registration | Installations | Reception – JAR Foyer  
 5:30 **Welcome by Dean Jonathan Beddoes** – JAR Centrespace  
 Remarks by Symposium Co-Chair: Lisa Landrum  
**KEYNOTE: BRIAN MACKAY-LYONS, *Economy as Ethic*** | Intro: Liane Veness, Co-Chair  
 7:00 ICE BAR | Reception + Installations – JAR Foyer + Courtyard

## Friday, February 2

- 9:00 Registration | Coffee – JAR Foyer  
 9:15 **KEYNOTE: TIMOTHY BAIRD, *Fabricating the Landscape*** | Intro: Marcella Eaton  
 10:45 **Paper Session 1 – *Fabricating Truth***  
 Centrespace | Moderator: Lisa Landrum  
 Pallavi Swaranjali, *Forging Architecture*  
 Steven Beites, *Context Through Awareness*  
 Katie Graham, *Architectural Storytelling in VR*  
 Ted Landrum, *Poetry as Research*  
 12:30 **LUNCH:** Centrespace (C.A.S.T. Slides + Installations)  
 1:30 **Paper Session 2a – *Fabricating in Situ***  
 Centrespace | Moderator: Alan Tate  
 Scott Gerald Shall, *Borrowed Intelligence*  
 Nahid Ahmadi, *Asphalt Deserts*  
 Dietmar Straub, *Snow Academy*  
 3:00 BREAK  
 3:15 **Paper Session 2b – *Fabricating in Situ***  
 Centrespace | Moderator: Tijen Roshko  
 Jennifer Smith, *Incremental*  
 Bryan He, *Making of the Hakka Vernacular*  
 Valentina Davila, *Down the Back Stairs*  
 4:45 **Installations / Brickworks** – Arch2 Gallery Reception  
 5:30 **KEYNOTE: JASON BRUGES, *Fabricating Ephemera*** | Intro: Tijen Roshko  
 7:45 \*DINNER: Peasant Cookery, 283 Bannatyne Ave. – Downtown (Exchange District)  
 \* DINNER pre-registration required

## Saturday, February 3

- 9:00 Registration | Coffee – JAR Foyer  
 9:30 **KEYNOTE: PHILIP BEESLEY, *New Sentient Architecture*** | Intro: Jae Sung-Chon  
 11:00 **Paper Session 3 – *Social Fabrics***  
 Centrespace | Moderator: David Van Vliet  
 Lawrence Bird, *Dominion*  
 Nikole Bouchard, *(H)our House*  
 Ryan Stec, *Making Public Space*  
 12:30 **LUNCH:** Centrespace | 1:15 Transition to C.A.S.T.  
 1:30 **Paper Session 4 – *Mediating Fabrics***  
 C.A.S.T. | Moderator: Liane Veness  
 Lancelot Coar, *Lignes d'erre*  
 Federico Garcia, *Lammers, Master Building Complex Forms*  
 Joe Kalturnyk, *Temporary & Immediate*  
 3:00 Closing Remarks: Symposium Co-Chairs Lisa Landrum & Liane Veness  
 3:30 Optional outing: The Forks - Biergarten - Warming Huts – Raw Almond (11pm)

# PRESENTATIONS

## Keynotes

BRYAN MACKAY-LYONS

Dalhousie University & Halifax

Economy as Ethic: The Work of MacKay-Lyons Sweetapple Architects

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TIMOTHY BAIRD

Cornell University

Fabricating the Landscape: Speculation, Experimentation, Simulation, and Implementation Since Modernism

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JASON BRUGES

London

Fabricating See-through Stone and Digital Cherry Blossom!

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PHILIP BEESLEY

University of Waterloo

New Sentient Architecture

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# Fabricating Truth

PALLAVI SWARANJALI, Carleton University

Forging Architecture: The Conronymic Nature of Architectural Creation in the work of Indian Ar. B.V.Doshi

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STEVEN BEITES, Laurentian University

Context Through Awareness

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KATIE GRAHAM, Carleton University

Architectural Storytelling in Virtual Reality: How VR Can Expand on Architectural Perception

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TED LANDRUM, University of Manitoba

Poetry as Research: Fabricating Architectural Truth

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# Fabricating in Situ

SCOTT GERALD SHALL, Lawrence Technological University

Borrowed Intelligence: Leveraging Industrial Fabrication To Evolve Building Production

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NAHID AHMADI, Carleton University

Asphalt Deserts: Rethinking the Architecture of Surface Parking Lots

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DIETMAR STRAUB, University of Manitoba

A Beautiful Waste of Time: Operating a Snow Academy

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JENNIFER SMITH, Auburn University

INCREMENTAL: Resilience through Disaster-Relief Housing

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BRYAN HE, University of Manitoba

Making of the Hakka Vernacular

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# Social Fabrics

VALENTINA DAVILA, McGill University  
Down the Back Stairs: Servants' Spaces in Montreal's Square Mile

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LAWRENCE BIRD, Winnipeg  
Dominion

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ELLEN GRIMES, School of the Art Institute of Chicago  
History's Future Fabrics: New Models for Historic Ecologies

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NIKOLE BOUCHARD, University of Wisconsin  
(H)our House

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RYAN STEC, Carleton University  
Making Public Space: Examining Walter Lippman & John Dewey's pragmatism as a constructive expansion to the spatial theory of public space

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# Mediating Fabrics

LANCELOT COAR, University of Manitoba  
*Lignes d'erre*: Tracing the History and Future of Force Flow in Structures

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FEDERICO GARCIA LAMMERS & JESSICA GARCIA FRITZ, South Dakota State University  
Master Building Complex Forms in the Absence of Graphics

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JOE KALTURNYK, Winnipeg  
The Temporary and the Intermediate: Strategies for a Better Dinner

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# Installations

LANCELOT COAR, University of Manitoba  
Proteus

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LAWRENCE BIRD, Winnipeg  
Dominion: 16 Trajectories

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NIKOLE BOUCHARD, University of Wisconsin  
BEEbrane

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GYUNGPU CHYON & JOHN SADAR, Parsons School of Design  
10 Kinds of Fog

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JORGE RIVERA & RYAN STEC, Carleton University  
Temporal Lines - Spiraling Time in the Non-Space of VRs

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DUSTIN WIEBE, C.A.S.T., Winnipeg    MYUNG DUK CHUNG, C.A.S.T., Winnipeg  
Instrumental Architecture    Poetic Canvas

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MICHAEL BUTTERWORTH, Winnipeg  
Ice Bar - Orange Crush

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# Brickworks

FACULTY OF ARCHITECTURE, UNIVERSITY OF MANITOBA STUDENTS:

WINNER, Matthew Saunders, ED3-Arch.Option  
Bee-rick

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WINNER, Brendon Klassen, ED4-Arch.Option  
Eva Hesse

---

WINNER, Claudia Parrott + Symrath Bali, ED2  
Zig-a-Brig

---

HONORABLE MENTION, Carson Wiebe, M2 Arch  
Maulten

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HONORABLE MENTION, Ralph Daniel Gutierrez, ED3-Arch.Option  
R.A.M.

---

HONORABLE MENTION, Chidera Johnmark Emekaduome, Joserielle Letasi Aridru and Calvin Atuhairwe, ED2  
Step

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HONORABLE MENTION, Papa Saliou Fall, ED2  
Lumi

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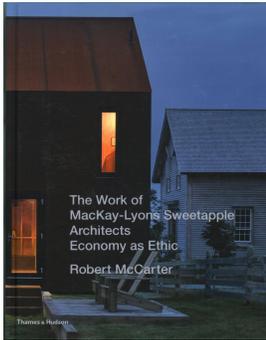
# KEYNOTES

A black and white photograph of a large industrial machine, possibly a paper mill or textile loom, with the word 'KEYNOTES' overlaid in large white letters. The machine is complex, with many gears, rollers, and structural beams. The lighting is dramatic, with strong highlights and deep shadows, creating a sense of scale and industrial power. The background is dark, making the machine and the text stand out.

Keynote

## Economy as Ethic: The Work of MacKay-Lyons Sweetapple Architects

BRYAN MACKAY-LYONS, BA, BEDS, MARCH, FRAIC, RCA, (HON. INT.) FAIA, (INT.) FRIBA, NSAA, AANB, AAPEI, OAA, VT, NH, UT



The work of MacKay-Lyons Sweetapple Architects embodies their engagement of two interrelated primary principles, economy & place.

Economy as an ethical imperative leads to their efforts to make the most with the least, and to make maximal experiential & spatial richness with minimal form, material and cost. Reinforcing this imperative is the architects' engagement of their place of practice, coastal Nova Scotia, and its climate, landform and material culture.

In the more than 30 years since the firm was founded, the work of MacKay-Lyons Sweetapple has consistently been characterized by its absolute integrity—a quality that is elsewhere increasingly rare today—and the principles in practice the architects have evolved and implemented to realize their works constitute a critically important contribution to the larger discipline of architecture.

Brian was born and raised in the village of Arcadia in southwestern Nova Scotia. He received his Bachelor of Architecture from the Technical University of Nova Scotia in 1978 where he was awarded the Royal Architectural Institute of Canada Medal. He received his Master of Architecture and Urban Design at U.C.L.A., and was awarded the Dean's Award for Design.

After studying in China, Japan, California and Italy, Brian returned to Nova Scotia in 1983 to challenge the historic maritime "brain drain" trend, and to make a cultural contribution to Nova Scotia where his Acadian and Mi'kmaq ancestors lived. In 1985, he founded the firm Brian MacKay-Lyons Architecture Urban Design in Halifax. Twenty years later, Brian partnered with Talbot Sweetapple to form MacKay-Lyons Sweetapple Architects Ltd.

The firm has built an international reputation for design excellence confirmed by over 125+ awards, including the Royal Institute of British Architects International Fellowship in 2016, the Royal Architectural Institute of Canada Gold Medal in 2015 and Firm Award in 2014, six Governor General Medals, two American Institute of Architects National Honor Awards for Architecture, thirteen Lieutenant Governor's Medals of Excellence, eight Canadian Architect Awards, four Architectural Record Houses Awards, eight North American Wood Design Awards and in 2017 the firm received the Global Award for Sustainable Architecture. Also in 2017, the firm was shortlisted nominee for the prestigious Moriyama Award. A fellow of the Royal Architectural Institute of Canada (FRAIC), and the Royal Canadian Academy of Arts (RCA), Brian was named Honorary Fellow of the American Institute of Architects (Hon FAIA) in 2001 and International Fellow of the Royal Institute of British Architects (Int. FRIBA) in 2016.

For decades, Brian has made a significant contribution to both architectural education and practice. He is a Professor of Architecture at Dalhousie University where he has taught for over thirty years and has held seventeen endowed academic chairs and given 200+ lectures internationally. In 2004 he was visiting professor for the Ruth & Norman Moore Professorship at University of Washington. Ghost (1994-2011) was a series of international Architectural Research Laboratories that took place on the MacKay-Lyons farm. Ghost was founded by Brian as a meeting place for an international 'school' of architects who shared a commitment to: landscape, making, and community. The final installment of Ghost took the form of a three-day historic gathering where the twenty-five invited guests and speakers commiserated over these shared values and their 'resistance' to the globalization of Architecture.

The work of the firm has been recognized in 330+ publications including six monographs: Seven Stories from a Village Architect (1996); Brian MacKay-Lyons: Selected Works 1986-1997 (1998); Plain Modern: The Architecture of Brian MacKay-Lyons by Malcolm Quantrill (2005); Ghost: Building an Architectural Vision (2008); Local Architecture: Building Place, Craft, and Community (2014); and the upcoming publication Economy as Ethic: The Work of MacKay-Lyons Sweetapple Architects, authored by Historian Robert McCarter, to be published Spring 2017. In addition to these monographs, the work of the firm has been featured in 100+ exhibitions internationally.

Houses designed in Atlantic Canada have made his firm a leading proponent of regionalist architecture worldwide. This recognition has led to a transition in the practice toward increased public and international commissions.

## Keynote

## Fabricating the Landscape: Speculation, Experimentation, Simulation & Implementation Since Modernism

TIMOTHY BAIRD



Timothy Baird is a licensed landscape architect and Professor and Chair of the Landscape Architecture Department at Cornell University. He previously held tenure track positions at the Pennsylvania State University and Texas Tech University where he taught design, design implementation, analog representation, and the history of landscape architecture beyond Modernism. Baird's ongoing research focuses on two areas: material expression in the designed landscape since the Modern era and the influences that helped to shape the designer's approach and palette, as well as environmental art and designed landscapes that were commissioned in land reclamation contexts. Before entering academia in a fulltime capacity, he practiced landscape architecture for 25 years on both coasts of the United States and in the Middle East with a variety of firms including Peter Walker and Partners, Hanna/Olin, Ltd., Hargreaves Associates, Collins DuTot Partnership, and Kuwaiti Engineers Office. During this time, he held part time or visiting teaching positions at Harvard University, the University of Pennsylvania, and Louisiana State University.

Professor Baird's writing and drawings have been published in *Critiques of Built Works of Landscape Architecture*, *Garten und Landschaft*, *Landscape Architecture*, *Landscape Design*, *Landscape Review*, *Ecological Design and Planning*, and *Terry Farrell: Urban Design* covering a diverse range of topics. He has lectured at several universities including Harvard, UVA, UC Berkeley, LSU, Arkansas, Auburn, SUNY ESF, Lisbon University, University of Buffalo, Ohio State, Clemson, and Rutgers and he has served as guest critic on studio reviews at Harvard, Penn, Lisbon University, Boston Architectural Center, Carnegie Mellon, RISD, University of California Berkeley, and LSU. His most recent honors and awards include a 2015 Dumbarton Oaks Summer Fellowship to continue his material research, a 2015 Stuckeman Endowed Professorship in Interdisciplinary Design at Penn State, a 2015 Council of Educators in Landscape Architecture (CELA) Excellence in Design Studio Teaching Award, and he was one of 32 Knight Cities Challenge grant winners in 2015 to implement a prototype plant nursery on vacant land in Philadelphia.

Baird has practiced landscape architecture since 2004 as an Adjunct Principal with the award winning critical practice, Landworks Studio, Inc. in Boston, a firm that has been nominated twice for the Cooper Hewitt National Design Award. While with Landworks Studio, he has played a leading role in developing the evolving body of work that reflects a commitment to proto-urban, strategic renewal efforts with aggressive ecological agendas in the design and implementation of several projects including the Leadership in Energy and Environmental Design (LEED) Gold Macallen Building, Boston's first LEED certified residential building and subject of the documentary film, *The Greening of Southie* by Bullfrog films, the LEED Platinum Blackstone Power Plant Renovation on the Harvard University campus in Cambridge, and the LEED Gold 200 5<sup>th</sup> Avenue in New York City, winner of the 2012 American Society of Landscape Architects (ASLA) Design Honor Award, New York Chapter American Institute of Architects (AIA) Merit Award, featured in the April 2010 issue of *Metropolis*, and was on the cover of the September 2012 issue of *Landscape Architecture Magazine*. Baird has most recently been working on projects on the RISD and West Chester University campuses and the Under Armour's Port Covington mixed use development and waterfront park on the Baltimore harbor that are grounded in ecologically performative design principles.

## Fabricating See-through Stone and Digital Cherry Blossom!

JASON BRUGES

Where do we go from here? Hull, UK (2017)



Jason Bruges is a multi-disciplinary artist and designer based in London. His work blends architecture with interaction design and uses a high-tech, mixed media palette to explore spectacle, time-based interventions and dynamic spatial experiences. Jason trained as an architect at the Bartlett School of Architecture, (UCL), before working with Foster + Partners for three years and Imagination as a Senior Interaction Designer. In 2002, Jason set up his own practice and now works with a talented team of people to develop and deliver interactive projects worldwide. He is passionate about creating site-specific pieces that engage people with their environments. The studio has recently finished working on a number of high profile projects including an epic, site specific light installation based in the main nave of York Minster, a multi sensorial permanent artwork at Le Grand Musée du Parfum in Paris and an immersive installation in Denmark that represents the 12 million migratory birds and their unique landscape.

*Fabricating Ephemera* *Fabricating See-through Stone and Digital Cherry Blossom!* In this lecture, Jason Bruges will use the studio's projects as a springboard to discuss the challenges of building real world architectural ephemera. He will investigate how storyboarding, fabricating, prototyping, coding, choreography and multidisciplinary experimentation can be used to develop technological work, which sits between architecture, installation and media art. He will reveal some of behind the scenes development supporting the work that has informed the studio's trajectory over the last 16 years. He looks at the process of sending animations to engineers for verification, giving clients samples to interact with and projects with built in collision avoidance.

"*Where Do We Go From Here?*" is explored as a recently realised project that redefines our use of technology in public space. Looking closely at the project, Jason asks, how do we balance the demands of a brief with innovative aspirations to provide new narratives and catalysts for conversation?

## Keynote

## New Sentient Architecture

PHILIP BEESLEY

PHILIP BEESLEY, MRAIC, OAA, RCA, is a practicing visual artist, architect, and Professor in Architecture at the University of Waterloo and Professor of Digital Design and Architecture & Urbanism at the European Graduate School.

He serves as the Director for the Living Architecture Systems Group, and as Director for Riverside Architectural Press. His Toronto-based practice Philip Beesley Architect Inc. operates in partnership with Rolf Seifert and the Waterloo-based Adaptive Systems Group, and in numerous other collaborations. The studio's methods incorporate industrial design, digital prototyping, and mechatronics engineering. Beesley frequently collaborates with artists, scientists and engineers. Recent projects include a series of hybrid fabrics developed with Atelier Iris van Herpen, curiosity-based machine learning environments developed with Rob Gorbet and Dana Kulic of the Adaptive Systems Group, and synthetic metabolisms developed with Rachel Armstrong of the University of Newcastle. His most recent collaboration with Iris Van Herpen has translated a shared sensibility for subtle materials, electricity, and chemistry into a collection of highly complex and diverse textile and haute couture collections.

His research focuses on responsive and distributed architectural environments and interactive systems, flexible lightweight structures integrating kinetic functions, micro-processing, sensor and actuator systems, with particular focus on digital fabrication methods and sheet-material derivations. Beesley has authored and edited sixteen books and proceedings, and appeared on the cover of *Artificial Life* (MIT), *LEONARDO* and *AD* journals. Features include national CBC news, *Vogue*, *WIRED*, and a series of TED talks. His work was selected to represent Canada at the 2010 Venice Biennale for Architecture, and has received distinctions including the Prix de Rome, VIDA 11.0, FEIDAD, Azure AZ, and Architizer A+.



Epiphyte Chamber, MMCA  
Seoul, Korea, 2013

*New Sentient Architecture:*

Can architecture come alive? Could future buildings think, and care? Researchers from the Living Architecture Systems Group are exploring these questions by designing new prototypes of experimental architecture. The Living Architecture collaboration includes architects, engineers and industrial designers from the University of Waterloo in Canada, with groups of researchers in North America and Europe. Design methods from the Living Architecture group are now being used to train emerging generations of architects and engineers, providing them with the skills they need to work with complex interconnected sustainable environments.

These extremely lightweight, flexible structures are interwoven with miniature computers controlling mechanisms that can sense, react and learn from viewers. The work is organized the same as a coral reef or a swarm of insects, with large numbers of many individual parts. These systems are connected together, passing signals back and forth so that the entire environment works as a whole. Interconnected vessels contain a liquid synthetic biology that can absorb and exchange materials from the atmosphere. Digitally fabricated components make meshwork scaffolds with mechanical fronds that gently stir the air. Cricket-like acoustic mechanisms make constantly-shifting choruses of whisper sounds, responding to movement of viewers. Working together, these systems suggest new ways of building adaptive, sensitive buildings of the future.

# PRESENTERS

## Forging Architecture: The Contronymic Nature of Architectural Creation in the work of Indian Ar. B.V.Doshi

PALLAVI SWARANJALI

Ph.D. Candidate

Azrieli School of Architecture & Urbanism, Carleton University

Ottawa, Ontario, Canada

[pallaviswaranjali@cmail.carleton.ca](mailto:pallaviswaranjali@cmail.carleton.ca)

At the beginning of his career, Balkrishna Doshi worked in Le Corbusier's office in Paris (1951-54) and later supervised his projects in India. Doshi admits how hard it was to be a proponent of modern architecture in the newly independent India where he had to concoct 'bizarre stories' to explain Le Corbusier's buildings.<sup>1</sup> This paper studies three works of fiction - *The Revelation*, *The Sacred Spring* and *The Legend of the Living Rock* written by Doshi to accompany three built projects - The Husain Doshi Gufa (Ahmedabad, 1992-95), the National Institute of Fashion Technology (Delhi, 1997) and Bharat Diamond Bourse (Mumbai, 1998). These stories incorporate both myth/fantasy and reality employing the "ironic imagination," which "permits an emotional immersion in, and rational reflection on, imaginary worlds."<sup>2</sup> Doshi's stories are invested with such verisimilitude that some mistook them to be real, while others aspired to create them. The stories are effective not through the "willing suspension of disbelief," but rather through the 'willing activation of pretense'.<sup>3</sup> His stories metonymically indicate the site/plot of the building subject to imaginative habitation.

Doshi brings in memories, expectation and fantasies with meticulous care for site, project characteristics and history of the place. Husserl defined presentation as perception or the consciousness of what now exists as present in person while memory and expectation as representation – the consciousness of something *as-if*, but in touch with an actual past/being. Phantasy's *as-if*, on the other hand, is unique in that it is directed precisely against actual existence. Doshi's fantastical stories are perceived first hand once the building is made. As opposed to the drawing, which stands as a representation of the building, the story presents itself via the building and represents the building while the building represents and presents the story. Alternating between the two conditions, the story and the building vie for the status of presentation and representation. With the misalignment or perhaps the seamlessness between fact and fiction, a space opens up between architectural presentation and representation imparting a contronymic nature to Doshi's architectural creation, where his architectural storytelling forges and in the process architecture is forged.

1 *Paths Uncharted. Ahmedabad: Vastu-Shilpa Foundation for Studies and Research in Environmental Design*, 2015, Pg. 370

2 Saler, Michael. *As If: Modern Enchantment and the Literary Pre-history of Virtual Reality*. Oxford University Press, 2012, 30.

3 Saler, *As If*, 28.

4 Husserl, Edmund, and John B. Brough. *Phantasy, Image Consciousness, and Memory, 1898-1925*. Springer, 2005.

## Context Through Awareness

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The introduction of digital tools within current modes of design/fabrication has led to a new breed of digital savvy designers capable of prototyping, evaluating and manufacturing design concepts from ideation to full fabrication. Yet the potential impact of digital tools far exceeds the specificities of process and technique. Its inherent value is derived from its ability to ignite conversation and to reflect and inspire through the interpretation of new processes, new functions and new aesthetics. This methodology has inspired a body of work that is innovative in its material application, computation and fabrication logics, yet it is self-reflexive, drawing inspiration from its milieu and providing a unique response to a complex set of social and contextual inputs. In an era of unchecked globalization and homogenization, each project seeks authenticity in search of craft and individual expression within a digital sensibility.

The paper explores, through three distinct projects, thematic currents of history and culture, memory and discovery. This is exemplified via **Jetée**, an expression of context through awareness that aims to reclaim a vandalized and underused public space, giving striking character to the urban space; **Embedded History**; a CNC derived, concrete artwork that celebrates the rich history of the Métis nation and the complex relationship of the First Nations people and French European fur traders; and most recently, **Insignia**; a heritage pavilion currently in development on the historic grounds of Exhibition Place in downtown Toronto, offering a visual narrative through history, one that evokes the volume of the original barracks and serves to preserve the memories of the soldiers who offered their lives to their country. Via the tangible process of fabrication and assembly, both off-site and in-situ, each project reveals a narrative or unveils an afflictive yet genuine truth of the inherent social complexities of the human and built environment.

## Architectural Storytelling in Virtual Reality: How VR Can Expand on Architectural Perception

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A piece of architecture tells a story through its material, composition, and occupants; however, the story is limited to what is visible to the visitor. Only a fraction of the history is shown through the physical construction of the building, with the less tangible factors lost in other mediums, unable to present themselves in the mortar and brick. As illustrated in the books *Ways of Worldmaking*, and *Flatland: A Romance of Many Dimensions*, new understandings of reality are possible through the reorganizing, emphasizing, and change of perspective of the contents in existence. By changing the way we see a building, we can alter or expand on its story and reality. Immerging technologies, such as virtual reality, introduce exciting new avenues to explore storytelling in architecture that will expand on how architecture is understood.

According to Devon Dolan and Michael Parets,<sup>1</sup> virtual reality storytelling can be defined as having one of two classifications in both existence and influence. Existence is the role the viewer takes which is either as an observer or as a participant. Influence is defined as the control or agency the viewer has on the outcome of the story, defined as active or passive. To expand on this, we can define the experience as either communal or solitary to explain if it is a shared or private experience.

The virtual reality storytelling types will have different results on how the architectural story is perceived. Through the application and comparison of each method, this research proposes to examine how storytelling within virtual reality expands the visitor's knowledge of the physical building.

1 D. Dolan and M. Parets, "Redefining the axiom of Story: The VR and 360 video complex," in TechCrunch. (Jan. 14, 2016). <https://techcrunch.com/2016/01/14/redefining-the-axiom-of-story-the-vr-and-360-video-complex/> (visited July 5, 2017).

## Poetry as Research: Fabricating Architectural Truths

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Truth is neither self-evident nor an impenetrable enigma; rather, as a work of fabrication, it lies somewhere in-between. The same is true of architectural truth. Never simply a factual thing independent of the vagaries of meaning and experience, truth in architecture is a collective fabrication, open to continual interpretation.

In this presentation I will read selections from my new book [Midway Radicals & Archi-Poems](#) (Signature Editions, 2017), and reflect on poetry as a mode of research. The symposium theme presents an opportunity to contextualize this work of heuristic fabrication in relation to questions of truth in architecture, philosophy and poetry. Sources framing the discussion will include: Adrian Forty's chapter on "Truth" in *Words and Buildings: a Vocabulary of Modern Architecture*, Louis Sullivan's *Kindergarten Chats*, Robert Duncan's *Fictive Certainties*, Hans Georg Gadamer's *Truth and Method*, Oscar Wilde's essay "The Decay of Lying"; and other sources foundational to what I call archi-poetry.

Etymologically, "poetry" (*poiesis*) simply means *making*. Paradoxically, however, true making requires fabricated truths characteristic of fiction and artifice. For Aristotle, poetry is a moving event mimetic of human *praxis* (practice, or action). Although poetry has come to name verbal arts, its original scope included the making of anything humanly useful or desired, including stories but also practical and symbolic artifacts. In our culture of ever-increasing specialization, it requires a willing suspension of disbelief to translate this synthetic understanding of poetry to "practices" of architecture, place-making and community-building. If we accept that truth is a construct, is it correct to suggest that buildings, cities and towns are works of artifice? To what extent is humanity a work of fiction? These questions are perhaps unanswerable in prose; it is the task of poetry to make universal questions perceptible through compact but meaningful fabrication.

## Borrowed Intelligence: Leveraging Industrial Fabrication To Evolve Building Production

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In 1920, the average US home represented an investment of about 20% of one's income, whereas in 2010, the average home represented an investment of over 34% of one's income. During this same time period, the waste produced by a single home had ballooned to over 3,000 pounds of solid wood waste and 1,800 pounds of engineered wood waste. These factors have curtailed homeownership and helped to create a growing population of renters, many of whom spend three times more on rent than a homeowner spends on a mortgage — a situation that prevents these families from ever becoming homeowners and makes it difficult to afford food, heat and other necessities.

If one performs an audit of other industries, a very different story emerges. In 1920, the automobile cost 71% of the average income and 12% of US citizens owned a car. By 2010, the cost was 16% and 81% of US citizens owned a car.<sup>1</sup> During this same period, the environmental footprint of the automobile shrank, as it did in most other industries. For example, Samsung has, over the last decade reduced their waste by around 200% and IKEA has shifted production so that over 88% of their waste is either recycled or the energy used, recovered.

Grounded in these practices, a group of faculty, students, developers, activists and industry leaders are generating a new model of building production, specifically engineered around the questions posed by affordable housing. This model, which brings together personalities and approaches from a range of industries, is projected to decrease, by half, the cost and time associated with housing while, simultaneously, reducing the home's environmental footprint and increasing its appraised value. Moreover, as the techniques used are socially-responsive and digitally-derived, the intelligence gained from each generation can be embedded in subsequent works — an arrangement that is present within most industries but absent in the production of affordable housing.

<sup>1</sup> All statistics courtesy of the US Census reports for the time periods cited. US Census Bureau Reports 2010, 1980, 1950 and 1920.

## Asphalt Deserts: Rethinking the Architecture of Surface Parking Lots

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Since the invention of the automobile, North American cities have been challenged to provide new typologies of spaces to accommodate the automobile. Besides the implemented roads and expressways, cities now had to provide a new space for the immobility of the car: the parking lot. These asphalt landscapes spread gradually but consistently over the urban fabric of our cities. In “Rethinking a Lot,” a study of parking lots by Eran Ben-Joseph, the head of urban planning at M.I.T., he explains that “in some U.S. cities, parking lots cover more than a third of the land area, becoming the single most salient landscape feature of our built environment.”

Canadian cities with their boundless prairies are not immune from this issue. The extensive natural landscape arguably makes it easier for people to dedicate vast lands to surface parking lots. Surface parking lots as utilitarian lands with their single and solitary land use sweep through non-spaces in the cities, surfacing the social and cultural fabric of the city as one of placelessness. The issue of these surfaces becomes dominant as they begin to spread over the dense urban environments such as our downtown cores. Winnipeg is an existing example of this issue with surface parking lots occupying around 40 % of the land in downtown. This thesis seeks to redefine these spaces as spaces of social and cultural opportunities by changing their conditions of permanency to a temporary state of land use. It argues for the necessity to redefine these voids as an integral part of our environment not by promoting their demolition, but rather by exploring their role on our everyday lives and their possible potential for future of our cities.

## A Beautiful Waste of Time: Operating a Snow Academy

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The liberating environment of academia allows us to try out and then reject thousands of ideas. That is a process that no client will ever be willing to pay for. The period spent studying landscape architecture and design is the perfect time to take risks and develop unconventional solutions while learning to follow – but also to expand – the rules. This presentation raises fundamental questions like: Can design be taught? Why are we always so serious? Are designing and laughing a contradiction in terms ... or a dream team?

Plato founded an academy in an olive grove outside the gates of Athens. Here, he and his students enjoyed teaching, learning and wandering at leisure in the cool shade of trees. The subjects taught were philosophy and science and the students called themselves academics. This great centre of learning, rich in trees, became both a garden and a meeting place.

How to operate a ‘happy’ academy in a climate where people’s individual calendar is comprised by nine months of winter and three months of bad skating? What could be more suitable for environmental fabricators than surveying ice and snow and developing a snow academy in this context?

For this Snow Academy, snow was initially gathered from parking lots, mainly due to the fact that this building material is cheap and abundant. Tons of this snow was poured on a riparian clearing in an elliptical form. This classical shape acted as the white heart of the academy – radiating elegance and forming the centre for additional snow structures. A field of columns as well as a generous ‘dining room’ complemented the peaceful setting. Thirteen bonfires in a late April night was a way of saying good-bye in a dignified manner to this fleeting landscape. Gone, never to return!

## INCREMENTAL: Resilience through Disaster-Relief Housing

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This research focuses on the large-scale issue of resilience through the small-scale lens of disaster-relief housing. Resilience is defined as an ability to recover from or adjust easily to misfortune or change.<sup>1</sup> The term applies to the built environment where communities are able to adapt and advance despite various stresses.<sup>2</sup> The topic is gaining international attention as the endemic effects of natural disasters are costing cities more money and damage due to vast concerns of population growth, climate change and sea level rise, poor urban planning and increasing poverty. While resilience is a broad and often, ambiguous topic, this study focuses on why disaster-relief housing plays a critical role in the health of our neighborhoods and cities.

Presently, the disaster-relief housing response is the same across the nation. The response for Miami mimics that of Manhattan though there are clear differences. These nuances should be accounted for to allow the housing response to be permanent, durable and desirable for occupants. Housing should be of a particular place and to an extent, a reflection of its occupants. These characteristics are ones that FEMA and similar response agencies strive for, but cost, timelines and deployment options make them hard to achieve.

INCREMENTAL is an alternative model for disaster-relief housing as existing strategies struggle to adapt to a variety of local conditions. This is a prefabricated and panelized housing model that is quickly deployed, compact for urban environments and can be assembled by local contractors. Disaster survivors may remain on their properties, near schools and businesses and connected to existing social networks. The INCREMENTAL prototype explored in this study provides disaster-relief housing for New York City residents by working within New York City's building code, energy guidelines and specific vulnerabilities to grow a more resilient city.

1 Merriam-Webster, Incorporated. Published 2017. Retrieved from [merriam-webster.com](http://merriam-webster.com) on Sept. 29, 2017.

2 100 Resilience Cities. Published 2017. Retrieved from [100resilientcities.org](http://100resilientcities.org) on Sept 29, 2017.

## Making of the Hakka Vernacular

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With earth, water, fire, wood, and metal, the Hakka people of China have evolved a way of living in and with the world. The development of the Hakka people and culture can be traced back to 317-589 in the East Jin Dynasty, from the Central Plain regions to the southern regions, through five major mass migrations, for over 1700 years up until the beginning of the republic of China in 1912. The Hakka is the only Han Chinese group that is named by the language it speaks (Hakka), as opposed to its geographical region (e.g. province, county, or city).

The Chinese character of Hakka (客家) is literally translated to “guest families.” The name emphasizes the Hakkas’ view that ancestral roots, guests and families are unlimited to time and geographical origins. The way the Hakka people inhabit the land by fabricating in situ, growing in situ, cultivating in situ, and worshipping in situ, reflects the Hakka’s view of understanding oneself in situ.

The land in the mountainous regions of China along the borders of three southern provinces: Jiangxi, Fujian, and Guangdong is the homeland of the Hakkas. Hakka is a culture that is dependent on the land it dwells, and interwoven with the landscape that supports the culture to flourish. For the Hakkas, to dwell in the landscape means to transform a natural place to enable generations of Hakkas to secure the well-being of its people from birth to death, from cradle to grave. This paper illustrates this symposium’s theme, *fabrication in situ*, through documentations and case studies from a field study of Hakka buildings in the summer of 2017, with scholarly research and historical references. This theme will be further explored through the study of vernacular Hakka building traditions and techniques, while reflecting on the slow but collective method of architectural construction and practice, in relationship to the building and development of the Hakka culture. The demonstration of the Hakka way of *fabricating in situ* aims to invigorate our sense of the world in relationship to human nature, and calls for a nuanced discourse on cultural and environmental sustainability in the contemporary milieu.

## Down the Back Stairs: Servants' Spaces in Montréal's Square Mile

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Scholars have produced extensive literature describing the magnificent mansions that populate Montreal's Square Mile. Flipping through the pages of such publications readers are captivated by the fine, rich, and stylish interior architecture of these houses' drawing rooms, dining rooms, bedrooms, art galleries and private studies. Nevertheless, such lavishly gilded décor renders the kitchen and servants' quarters invisible. This paper evaluates three of Montreal's most prominent mansions — now property of McGill University — from the standpoint of the many servants who inhabited them. In particular, it will analyze the spaces designed with the domestic employees in mind and will draw a systematic comparison between the two types of coexisting spatial realities: one of contentment and affluence and other of subjection and paucity. The three houses that structure the narrative presented here are the J.K.L House, Hugh Allan House, and H.V. Meredith House, all located in the Square Mile and designed by Montreal's acclaimed architects: William and Edward Maxwell.

The John Bland Canadian Architecture Collection's affluent archives on the E. & W.S. Maxwell designs contain account books, names of contractors and artisans for every one of the brothers' buildings, along with the date, and cost of the work specially conceived for ambitious businessmen. These records, alongside their magnificent, colorful drawings, provide an invaluable resource that underlines the degree of respect the Maxwell brothers awarded to their work. By using tools of architectural analysis which includes photographs, plans, drawings, and on-site observations, this paper will broaden our understanding of a less-known type of inhabitation happening in these houses. This research aims to disclose if, in fact, the "respectful approach" that E. & W.S. Maxwell granted to their designs was extended to the servants' portion of the building or if it was exclusive to the upper levels the "Merchant Princes of Montreal" inhabited.

## Dominion

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Dominion is a research/creation project focused on the manufactured prairie, examining through it the modern project to map, mark, and transform the Earth. Such efforts are epitomized by the 19<sup>th</sup> century subdivision of the prairies by the Dominion Land Survey (DLS) (c. 1878). The grid of the DLS has an intriguing resonance with 21<sup>st</sup> century systems of mapping and representing the Earth. These too divide the planet's surface into repeating geometric elements — satellite tiles — which are sewn together to produce an ostensibly seamless map.

Yet both these mapping projects fall short of their goals. Natural features, alternative understandings of occupation and ownership, cycles of river and rain, all disrupt the controlling grid of the DLS. Similarly, our attempts to standardize and commodify the image of the Earth fall prey to glitches and anomalies, failures in the sophisticated systems we have created to manage representation. In Dominion, these accidental byproducts of our contemporary imaging tools are the lens through which we perceive the longer, and ongoing, historical failure of attempts to control the world — of which architecture is often a key tool.

The paper discusses these ideas with reference to one of the products of Dominion — 16 Trajectories (installed at Atmosphere 10); to works by other artists working popular imaging platforms, for example Mishka Henner and Jon Rafman; to writing on the theory of history of technology and media, particularly Bernard Stiegler; and to the implications of these for how we look at architecture, landscape, and regional planning. The paper will also provide a brief technical overview of 16 Trajectories, outlining the tools used to gather and manipulate imagery and sound, and the choices made in selecting both.

## History's Future Fabrics: New Models for Historic Ecologies

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Conventional models of historic conservation are inadequate for post-industrial sites that operate at the scale of infrastructure. This essay examines how ecological ideas and social network theory can shape new forms of conservation that simultaneously embrace the dynamics of ecosystems and the complex temporalities that characterize human culture and imagination. My argument uses the Midewin National Tallgrass Prairie, an 8,000-hectare site in the American Midwest, as a case study for these ideas. As climate change unfolds and the need to preserve, rebuild, and regenerate post-industrial brownfields becomes more urgent, planners and designers need to devise more robust, dynamic, and adaptive models for heritage conservation.

Abandoning conventional approaches grounded in modernist visions of a perfect past will require a challenging mix of technical experiment and cultural initiative that adapts models from ecological theory and critical social philosophy to the conservation of landscapes and buildings. Designers and planners will need to initiate this new understanding of heritage by deploying two parallel strategies. The first strategy will require careful research into the ecological and economic performance of various approaches to conservation. The second strategy asks us to change the lens through which we view heritage, and requires a public debate and discourse that examines how we fabricate our histories and cultural understandings.

## (H)our House

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Milwaukee, Wisconsin has a rich industrial past as it was once home to various machine makers, steel corporations and automotive parts plants. In 1915, populations began migrating to the city to take advantage of the burgeoning employment opportunities that these industries had created. A large percentage of industrial workers were blue collar, middle class African Americans. De-industrialization began in the 1970s, resulting in an economic downturn that has left Milwaukee's North Side ravaged with issues of unemployment, abandonment and crime. Today there are nearly 1,600 city-owned and 1,400 bank-owned homes as a result of the foreclosure crisis. Additionally, the city owns approximately 2,700 vacant lots that are on the market for a whopping \$1.

*(H)our House* is a design project that began by spending a significant amount of time on the ground, getting to know the place and the people that live in Milwaukee's Harambee neighborhood. Through several visits, the foreclosed homes and vacant lots that surround the *(H)our House* site were documented. Through discussions with local residents, organizations and city officials, a thorough set of documents were created that cataloged the urban spaces, architectural typologies, material palettes and human activities that exist within the area. With these records, a pavilion was designed that transformed existing architectural typologies using salvaged materials that are native to the neighborhood. These spaces were programmed to address the specific needs and desires of the local residents.

*(H)our House* proposes playscapes to create safe environments where local youth can engage in physical activities that foster recreation and collaboration amongst residents and performance platforms to provide an urban infrastructure that enables the rich cultural acts of art, dance, food and music to flourish within the community. Together, these interventions create a healthy urban ecosystem and provide promise to Milwaukee's under-served neighborhoods.

## Making Public Space: Examining Walter Lippmann & John Dewey's pragmatism as a constructive expansion to the spatial theory of public space

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Public space is a modern fabrication. It emerges from spatial theory crafted in the mid- twentieth century as a tool to defend open and shared spaces in the modern city. The term *public space* made its most significant early appearances in Hannah Arendt's *The Human Condition* (1958) and quietly in Jane Jacobs' *The Death and Life of Great American Cities* (1961). These two eloquent and enduring arguments for the value of the common world helped define the many spatial theories of loss that have come since then, most of them organized around the idea (or ideal) of public space and the great loss of the city as it once (never really) was. By the accounts of the city in most of these theories, public space is on its last legs. It has been erased, suppressed, sub-contracted, sold off, fenced off, filled in and built upon. While it is true that the common space of the city is always in transformation, this presentation offers a theoretical proposition, which sees this transformation as a constructive strength. As a counterpoint to the theoretical roots of public space (particularly in Anglo-European and American spatial theory) I propose a constructive addition to theories of public space grounded in the pragmatic writings of Walter Lippmann's *The Phantom Public* (1925) and John Dewey's *The Public and its Problems* (1927). Dewey and Lippmann drew attention to problem of politics centered on the role of the 'informed citizen', given the complexity of the globalized world, suggesting a more tangible understanding of how specific publics are formed around emerging issues. In this presentation, I will examine particular cases of temporary art and design interventions (into the common spaces of the city) through the pragmatic theory of Dewey and Lippmann, to offer a more constructive dimension to our understanding of the common spaces of the city and our existing theories of public space.

*Lignes d'erre*: Tracing the History and Future of Force Flow in Structures

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*Things themselves are lying and so are their images* – Robert Le Ricolais

The search for meaning in architectural form can be traced back as far as humans have endeavoured to shape material. And while there have been innumerable efforts to elicit connections between building form and the conceptual ideals of our cultures, there has also been a parallel pursuit for a closer link between the shape of structures and the invisible forces that move through them. These forces, though unseen, are largely responsible for a building's structural performance, material efficiency, and the construction methods required to realize them.

Our understanding of these hidden energy fields has, like our cultural impulses in design, evolved throughout time, and yet remained a constant link to our primal bond with the material world and the mysterious laws that govern its behaviour and performance in our structures. As design traditions and construction methods have advanced, so too have the ways in which our designs relate to these forces both aesthetically and structurally.

This talk will centre on both historical examples and emerging trajectories of projects that have connected material behaviour, design intent, and invisible force flow to achieve highly efficient and often surprising results. Originating from some of the methodological revelations of Robert Hooke, to the physical computations offered by the modeling techniques of Frei Otto and Heinz Isler, the presentation will follow a thread of physical and computational research endeavours that have used modeling not as a mode of representation, but rather as a dynamic tool to map force-flow in structures and to predict the sequential efficiencies of full-scale construction. Distinct from industrial modern traditions of forcibly shaping material through brute force to submit to "ideal" shapes, this approach has offered a consistent counterpoint to ideological trends that have often resulted in inefficient design and construction methods speaking principally to conceptual momenta.

To illustrate some of the opportunities of this approach, research by the author will be presented in which recently discovered techniques in the mapping of forces has helped lead to new methods of constructing flexible framed structures that utilize material behaviour, gravity, and structural form, to create highly efficient fabric formed ice shells.

## Master Building Complex Forms in the Absence of Graphics

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Since the 15<sup>th</sup> century, drawings have comprised the primary medium through which to imagine buildings. According to Mario Carpo, the gap between ideation and execution in contemporary architecture has been filled by a digital making space that extends the sensibility of craft and prompts a return of the master builder. This paper posits that complex forms can be the result of the economical and elegant resistance of gravity through form, rather than being the product of advanced digital technology. More importantly, complex forms can be constructed in the absence of graphics.

There are two contemporary paths in digital fabrication and parametric design, which affect the tectonic role of Mediating Fabrics and challenge the assumption of a return to the era of the master builder. First, the design of complex forms and their assembly through direct to production fabrication methods. Second, the design to production of 3D printed elements and robotic labor. In contrast to the master builder, certain aspects of digital fabrication and parametric design neglect the ability to resist gravity through form. Instead, the construction of such forms depends on rationalizing irrational surfaces. When considering contemporary graphics such as drawings, or more accurately images of drawings, graphics are complicit in the mediation between imagining irrational forms and enabling their construction. Rather than a return to master building processes, most digital fabrication extends the industrial production rationale of modernism.

The claim that complex forms can be constructed without the primary aid of graphics is supported by the work of two building shop courses that focus on the full-scale construction of two types of doubly curved surfaces, Timbrel Vaults and Ruled Surface Walls. This work links the historic methods of construction of two master builders, Rafael Guastavino and Eladio Dieste, in order to magnify the contemporary tension between graphics and complex forms.

## The Temporary and the Intermediate: Strategies for a Better Dinner

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This presentation will address the boundaries of temporary architecture. In my practice I develop projects with an agenda to provoke public space. The foundation of the projects revolves around “program” as a way of developing space and with an eye to briefly reprogramming the city. Through various experiments and iterations I developed what is called RAW:almond, a temporary culinary arts festival with a mandate for experimentation and collaboration. I will be addressing the motives behind the project, its’ successes and failures, its’ political aspirations and realities and a call for more adaptive and responsive architecture that suits peoples needs when they need them.

# C.A.S.T.

## Centre for Architectural Structures & Technology

The 2018 Atmosphere-Fabrications Symposium is intended, in part, to develop and disseminate the mandate of the Faculty of Architecture's C.A.S.T. facility.

The Centre for Architectural Structures and Technology is an interdisciplinary research laboratory embracing technical and poetic dimensions of making. C.A.S.T. provides unique conditions for critical and creative experimentation with technologies germane to the design, construction and performance of the built environment. The generous and well-equipped facility enables research at diverse scales and with a variety of media, methods and tools. Researchers at C.A.S.T. explore materials and assemblies; experiment with building techniques and construction methods; devise and test prototypes; study the limits and potential of natural laws; investigate sustainable practices; cultivate Indigenous modes of making; and collaborate in the rigorous play of imagination. C.A.S.T. supports both discipline-specific and cross-disciplinary research that advances knowledge, promotes creativity, and supports innovation in teaching. C.A.S.T. seeks to promote research benefiting students, researchers, industry, the public and our planet.

The C.A.S.T. facility is unique in Canada, having been specifically designed to support a vision of architectural education and research grounded in collaborative making. C.A.S.T. offers a 500m<sup>2</sup> (5,500 ft<sup>2</sup>) facility well equipped for work in any standard—and many non-standard—fabrication materials and methods, including concrete, masonry, carpentry, fabric/textiles and earthworks. The building is centrally located on the University of Manitoba's Fort Garry campus. It is situated between the Faculties of Architecture and Engineering, and is close to the sculpture and ceramic studios of the School of Fine Arts. C.A.S.T. also participates in an expanding constellation of world-class research facilities within and beyond the University of Manitoba.

The C.A.S.T. building was designed and constructed with nearly \$1.5 million in support from the following: the Canada Foundation for Innovation; the Manitoba Innovations Fund; Western Economic Diversification Canada; and over one hundred companies, organizations, and individuals in the local and regional construction industry.

The C.A.S.T. building was featured in *Canadian Architect* (Feb. 2003).

C.A.S.T. supports a Researcher-in-Residence program.

For more information see:

<http://umanitoba.ca/faculties/architecture/cast/index.html>

# INSTALLATIONS



## Dominion: 16 Trajectories

LAWRENCE BIRD

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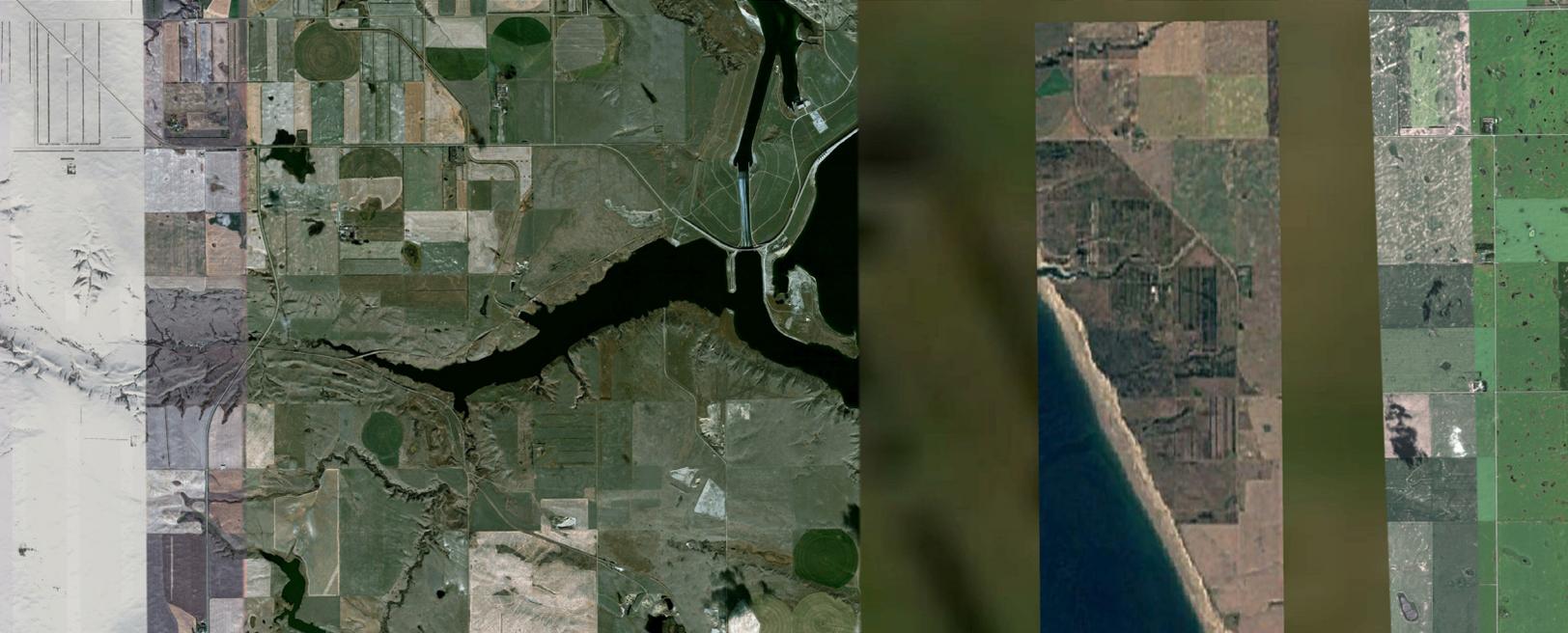
The western Canadian prairie is a fabricated / manufactured geography. Once a vast expanse of grassland, this landscape was transformed into a machine for growing crops with the implementation of the Dominion Land Survey (DLS) in the 1870s. This survey, which imposed a standardized, mile-square grid on the prairies, had as its express intention the rapid transformation of land for sale to settlers. It was in many ways exemplary of modern processes of standardization, commodification, and colonization.

Yet the DLS also represents the failure of those processes. Surveying errors, seasonal inundations, sloughs and rivers with their own agency, and contradictory patterns of land occupation — from the French river lot system, to Mennonite models of collective ownership, to aboriginal and Métis patterns of farming and hunting — meant that disruptions in the DLS grid appeared immediately.

Today these territories of friction endure, amplified by the complexities of a more contemporary system of survey: aerial and satellite photography, systematized and commodified by platforms such as Google Earth. As the 19<sup>th</sup> century attempted to control the land, so these systems attempt to standardize and process its image. That attempt, too, fails.

*Dominion: 16 Trajectories* explores the anomalies, breaks, gaps and glitches in both the DLS and Google Earth's mapping of the prairie landscape. The project represents these escapes from order as projections on the windows of the Centre for Architectural Structures and Technology (C.A.S.T.). The work consists of 16 video sequences (each 10 to 15 minutes in length) captured at high resolution from Google Earth imagery, at a variety of scales and points of view. The videos are accompanied by audio generated from samples of ambient sound modified digitally in response to the flow of images, overlaid with audio by Glenn Sogge, also modified.

*Dominion: 16 Trajectories* is funded by the Canada Council and the Winnipeg Arts Council, and has been presented in another architectural context at Nuit Blanche Winnipeg 2017. For Atmosphere 10 it is re-imagined in dialogue with industrial architecture and the milieu of C.A.S.T.'s thoughtful and passionate manual fabrication.



# Installation

## The BEEbrane

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Every year thousands of natural disasters strike cities like a chain saw, toppling street trees and destroying thousands more in urban parks and woodlands. Municipalities across North America make constant efforts to rid their city streets and parks of tree debris and fallen branches. The BEEbrane is an on-going design research project that proposes to convert fallen urban tree debris and salvaged wood materials into new homes for urban flora and fauna, with a specific focus on the creation of urban honeybee habitats. The BEEbrane takes inspiration from one of the oldest and most natural forms of bee keeping for both its formal and conceptual framework - a hollowed-out trunk cavity called a Bee Gum. This form of habitat provides an environment that protects the hives from threatening weather conditions, like rain, wind, frost and snow. The BEEbrane reduces urban waste, enhances environmental biodiversity and invites people to experience ever-changing processes within nature.

The BEEbrane is an interdisciplinary project that operates in the space between art, architecture, landscape and science to create productive urban placemaking strategies. The research and design process requires contact and communication with various local organizations to identify, locate, quantify and collect wood waste materials. This includes correspondence with a number of local groups, ranging from the city parks department, to non-profit urban wood organizations, to local lumber mill owners. Additionally, collaborations with area beekeepers and ecologists are an integral part of the design development process.

This BEEbrane is a temporary 2018 Atmosphere Symposium installation produced in a collaborative design workshop setting, where students will work with locally sourced wood waste to produce urban honey bee habitat prototypes. The BEEbrane demands that we work with what's at hand.

BEEbrane



# Installation

## 10 Kinds of Fog

GYUNGPU CHYON

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Tranquil... still... foreboding... we never really see fog so much as see through it; its immersive haze enwraps everything in an air of mystery. A profound interaction of ground and sky, fog masks details, occluding light and diminishing shadow, to create a flattening depthlessness. Fog also amplifies depth as it draws a veil of intimacy, making everything distant more distant, and drawing everything close even closer. Yet, we never really see it...

*10 Kinds of Fog* is a video installation that explores and demonstrates how the depthless, formless phenomenon of fog can assume different forms, structures, and textures. It approaches fog as a material to design with – jointly shaped by the interactions of materials, air quality and designer – rather than a phenomenon which merely happens. Water is ultrasonically transformed to fog and propelled through different modulators and textiles. Different combinations of these and fan speeds become like costumes, while the air becomes a partner for the fog to act with, as the fog assumes different characters: wispy and buoyant, heavy and slithering, turbid and tempestuous, or eerie and still.

High definition video captures the magical effects that result from the relation between maker, materials and milieu, as the constructions of ultrasonic foggers, fans, textiles and modulators and the atmosphere itself imbue the fog with different textures, weights, and movements. It reveals qualities arising from the interplay of fog, textiles and air that otherwise escape us. The resolution and scale of the video projection amplifies nuances that would ordinarily be overlooked, akin to a portrait, and in doing so, it effuses an uncanny quality.

10 Kinds of Fog



## Proteus

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*The cell never acts; it reacts. - Ernst Haeckel*

In 1899 the German biologist and artist Ernst Haeckel published his seminal text *Kunstformen der Natur* ("Art Forms of Nature"), in which he presented hundreds of his own etchings of newly discovered and strange microbial organisms later known as Radiolaria. These simple protozoa organism only measure between 0.1 - 0.2 mm but produce countless variations of highly complex and extraordinary geometries. The mysterious forms of these creatures are created by the growth of a flexible membrane separating the various pressures within this organism from its environment and forming a silica skeleton around these fluid-filled membranes. The results are as diverse as the make-up of the organisms and the unique sites they are formed in.

Current research by the author explores the ability of flexible membranes to produce highly complex and stable geometries using various forms of pressure and manipulation on fabric membranes and rigidifying them using various liquid-to-solid materials (ranging from plaster, to wax, to concrete, to ice). This proposal is for the production and installation of 3 - 5 fabric formed ice shell structures (ranging in size from 5' - 10' tall) to be built for the atmosphere conference, creating unique objects of spectacle and a demonstration of the theme *fabricating in-situ* by using the unique climate of our local environment in winter and the creative forces of our students to shape these structures. They will be produced in ARCH 7070, an Advanced Technology Topics course, running for the first five weeks of the winter term and ending on the week of the Atmosphere conference. The work will be designed by students and built on a site visible to the attendees of the conference, namely the JAR courtyard, allowing access to water, electricity for lighting at night, and as an accompaniment to the ice bar.

Proteus is manifested in collaboration with Myung Duk Chung, Visiting Researcher-in-Residence at C.A.S.T., together with graduate students in the Frozen Structures: Fluid Forces Tech Topics course in the Department of Architecture: Mitali Dembla, Mojtaba Ghofrani, Lucas Harle, Tessa Linde, Matthew McQuire, Fatima Naeem, Helia Saadat, Nasim Sadeghi Nejad, Tyler Sample, & Luxiameng Yang.

Proteus



## Temporal Lines - Spiralling Time in the Non-Space of VR

JORGE RIVERA & RYAN STEC

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The leaders of the third wave of 'Virtual Reality' developments are obsessively pursuing a detailed synthesis of reality as we see it. Many producers of this synthetic reality believe they will have soon built a permanent bridge across the uncanny valley to a new shore, where the perceptual boundary between synthetic and material reality is impossible to determine. This passionate push to reach the other side misses, perhaps, some of the more interesting things in the valley below. Temporal Lines descends into the uncanny valley to experiment with the 'immersive space' of VR and develop new understandings of this representational technology, specifically by playing with disconnect of the embodied experience of the material world and the visual perception of non-space.

Temporal Lines begins with a table and chair in the material world. An audience of one sits at the table, where there is a collection of domestic objects, a metal knob and a VR headset to wear. Once wearing the headset they find the identical table and objects represented in the headset. The metal knob (in the material world) can be turned in either direction. As it turns the representation is transformed. The effect on the representation by the looping of the knob is mediated by an algorithm pulling the transformation on a spiralling arc, circling without arriving at the same place.

Combining digital and analogue drawing with photography, photogrammetry and game design, Temporal Lines is an exploratory spiral centered around a table. The table is a hinge between two things: one is a space and the other a non-space. The body is in a space of the body separated from visual perception by the non-space of the VR headset. Sitting at the table, the circular knob in space is wound (in either direction) and a spiral of time unfolds in the non-space. The objects form, reform and deform as their position in the perspectival non-space shifts along the path of a perpetually unfolding spiral.

# Temporal Lines



## Instrumental Architecture

DUSTIN WIEBE

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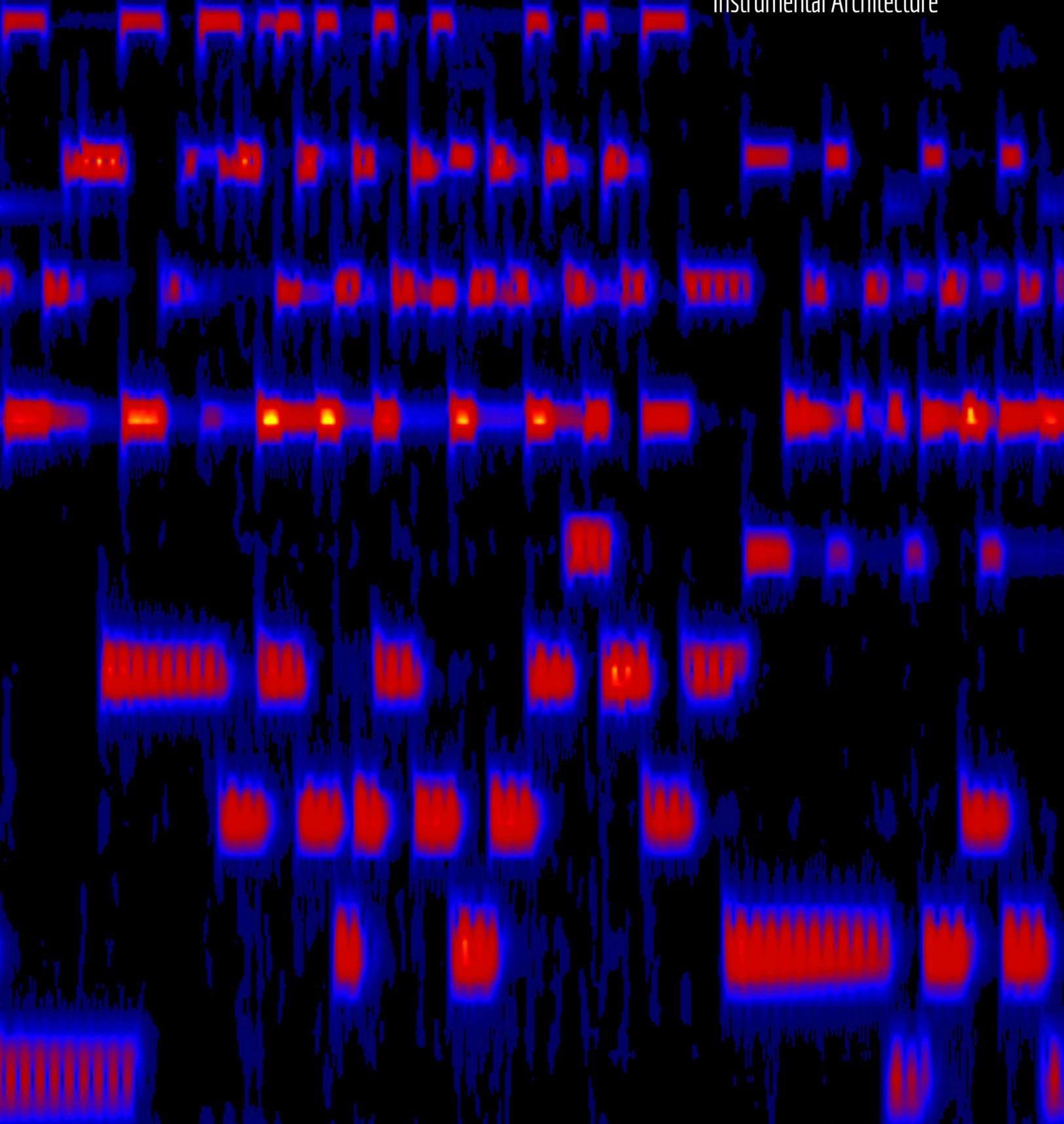
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What can musical instruments and the sounds they produce tell us about the times, spaces, and places we inhabit and our relationships therein? How can a primarily temporal endeavour such as music coalesce with architecture, a discipline firmly rooted in space? Instrumental Architecture explores these questions vis-à-vis vibrating bodies of diverse geographic, temporal, and cultural origins, specifically: the monochord of ancient Greece, gender wayang of Bali, and modern classical guitar of Spain. Live performance, recorded sound, and visual representation will be employed to consider the interdisciplinary and inter-sensory relationships and discourses fostered through sonic vibration.

Dustin Wiebe is currently a researcher in residence in the Faculty of Architecture at the University of Manitoba. His current work examines the relationships between material culture, religion, and musical aesthetics. He is currently building a set of Balinese *gong kebyar* instruments at the Centre for Architectural Structures and Technology (Winnipeg, MB). The North American premiere of *Misa Bali* (Bali Mass) by will be performed on this percussion ensemble at C.A.S.T. in April 2018.

Dr. Wiebe has previously taught courses in musical practice, theory, and research methods at the University of Connecticut and Central Connecticut State University. He earned the Ph.D. in ethnomusicology at Wesleyan University and an M.A. and M.M. (guitar performance and literature) from the Eastman School of Music. His previous research centers on the role of localized music and dance practices in interreligious—particularly Hindu/Protestant—relations, work that has been published by Leiden University Press, the Yale Journal of Music and Religion, and Routledge. Dustin is also a gamelan music practitioner, having studied with several highly acclaimed Balinese musical masters including I Made Subandi and I Gusti Komin Darta. He has performed Balinese music at notable venues in North America and Indonesia, such as the Bali Arts Festival, the Indonesian Embassy (Washington D.C.), and Le Poisson Rouge (N.Y.C.).

## Instrumental Architecture



## Poetic Canvas

MYUNG DUK CHUNG

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The world around us moves in emotional and wonderful ways. We spend the earlier parts of our lives learning about our environment through perception and interaction. We expect the physical world around us to behave consistently with our perceptual memory.

-James Tu, Dynamic Bodies course description, Spring 2003, ITP.

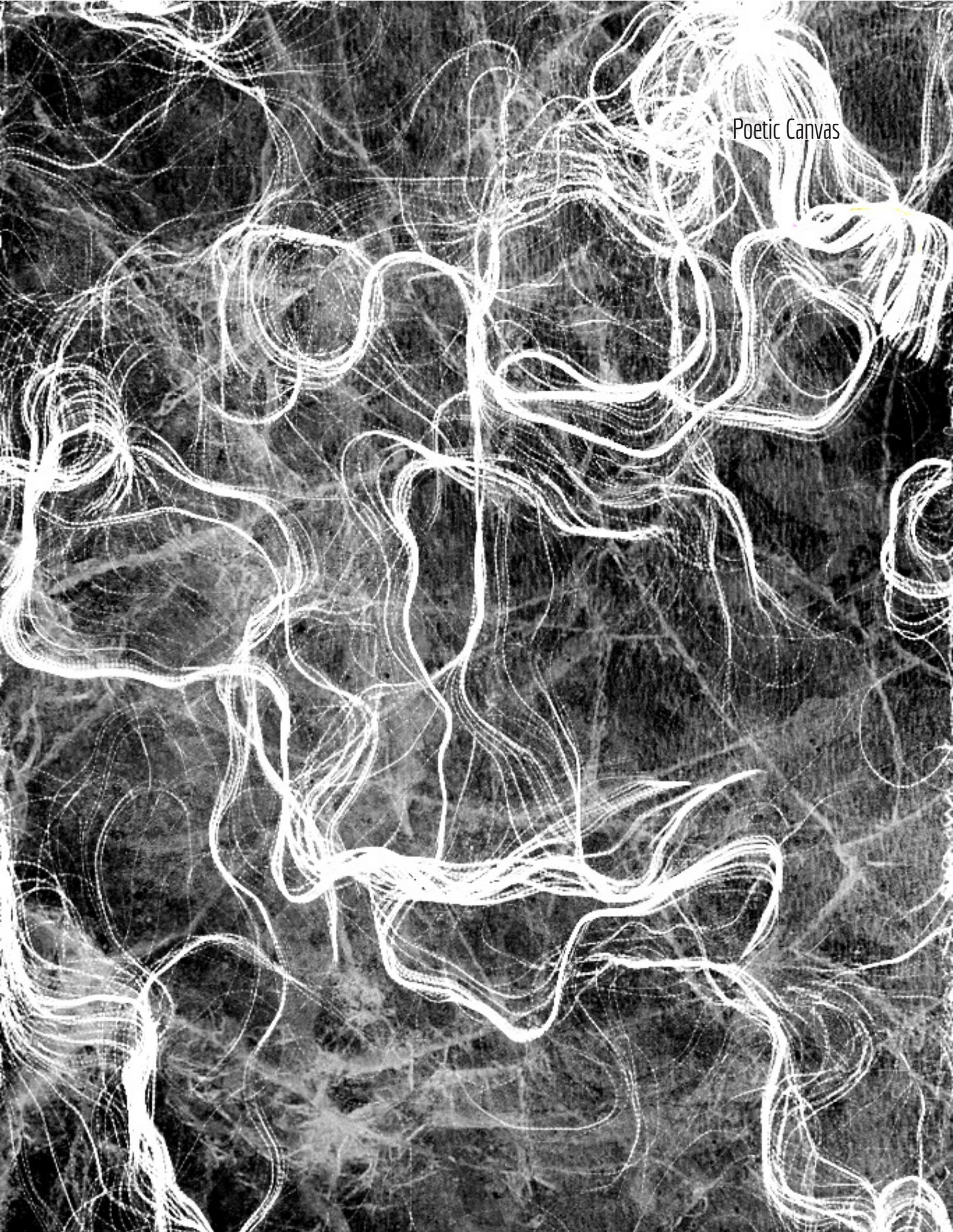
Taking inspiration from the complex forms documented in the 1899 drawings of Radiolaria by Ernst Haeckel, the wall becomes a discussion of forces pulling towards two points. Only through the communication of forces from each side of the membrane to the other is the form found. Once the forces reach equilibrium they are captured, frozen in time and place.

After understanding, simulating and incorporating the physical world, digital simulation is merged into the beautiful physical canvas formed by ice and fabric. Flying particles follow the forces of vector fields generated by the node points of the canvas, which play a significant role in the making process. The velocity of particles is accelerated by the speed wind of Winnipeg, Manitoba. From the perceptual memories of natural movement, we hope that it will give more poetic experience to the users.

Poetic Canvas is manifested in collaboration with M.Arch students Fatima Naeem, Tyler Sample and Luxiameng Yang.

Myung Duk Chung is a visiting researcher-in-residence at the University of Manitoba's Centre for Architectural Structures and Technology (C.A.S.T.). He is researching new techniques of fabric formwork and its convergence with diverse medium. His interest is in co-merging softness and hardness, exploring new ways to fabricate various objects. From toy making to large installation and web-based platforms, he explores flexible materials as a malleable platform.

Poetic Canvas



# Installation

## Orange Crush

MICHAEL BUTTERWORTH (design), M.Arch Graduate, 2017  
ANDREW SIMONSEN (fabrication), ED4-Arch Option Student  
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Orange Crush was inspired by the conference theme of Fabricating Truth and the ever-popular orange construction tarps of Winnipeg. Every fall partially constructed buildings all around the city are skinned over with the brightly coloured tarps obscuring both the formal qualities of building and the act of making the building itself. Over the course of winter the tarps act as masks that simultaneously conceal the truth of the building beneath, while also offering a tangerine surface that seduces one's mind into imagining the building beyond. As spring arrives the tarps are sadly taken down and left to sit quietly until the next fall. The newly unsheltered building is then exposed, at long last left to be (un)acknowledged.

# BRICKWORKS

# Brickworks



## WINNERS:

### Bee-rick

Matthew Saunders (ED3-Arch)

### Eva Hesse

Brendon Klassen (ED4-Arch)

### Zig-a-Brig

Claudia Parrott + Symrath Bali (ED2)

The Brickworks competition was launched in the fall as part of the Fabrications symposium. Nearly 50 fabulous submissions were received. The jury consisted of visiting C.A.S.T. Researchers-in-Residence Dustin Wiebe and Myung Duk Chung, plus archi-poet and Hands on Masonry instructor in the Department of Architecture, Ted Landrum.

## JURY COMMENTS

### Bee-rick

“The judges were drawn to this submission for its creativity of expression and thought. It makes compelling reference to the themes of Atmosphere 10, particularly through the use of quasi-lattice, honeycomb structures and beeswax, evocative of domestic and labour-driven social fabrication respectively.”

—Dustin Wiebe, C.A.S.T. Researcher-in-Residence

“Each face is unique. High-tech strata soften in low-tech wax. If you stand it up like a soldier (and squint), it resembles Louis Sullivan’s Wainwright Building.”

—Ted Landrum, Archi-Poet

### Eva Hesse

“This project is a collaboration of functionality and expression of masonry: to explore expressive attributes of structure as well as space.”

—Myung Duk Chung, C.A.S.T. Researcher-in-Residence

“The jute tangle makes me think: of an open network of ganglia and synapses. Maybe it’s the fuzzy side of a jumbo-Velcro, only half-way invented. Or a gentle cage. When I pick it up, I feel like running home to re-read R.D. Laing’s weird book called Knots.”

—Ted Landrum, Archi-Poet

### Zig-a-Brig

“The serrated origami surface plays nice in the light. Versatile, they can stack in manifold ways, each making a different texture. In wonderland, the Zig-a-Brig’s teeth could grin with shark-like precision.”

—Ted Landrum, Archi-Poet



HONORABLE MENTIONS

**R.A.M.**

Ralph Daniel Gutierrez (ED3-Arch) Carson Wiebe (M2-Arch)

**Maulten**

**Lumi**

Papa Saliou Fall (ED2)

**Step**

Chidera Johnmark Emekaduome  
Joserielle Letasi Aridru  
and Calvin Atuhairwe (ED2)

R.A.M.

“This project is a metaphor of industrial production and fabrication process with sophisticated mode of making.”

—Myung Duk Chung, C.A.S.T. Researcher-in-Residence

“Flotsam/Jetsam in an age of uber-obsolence. Will it float? If Frankenstein were alive today, he’d robot-love this bit of bittersweet tongue-in-cheek. It makes me laugh and cry, and that’s ok.”

—Ted Landrum, Archi-Poet

Maulten

“Texture, colour, form & attention to detail in the fabrication process helped to distinguish this work from many others in the competition—an imaginative abstraction of the common brick!”

—Dustin Wiebe, C.A.S.T. Researcher-in-Residence

“Wow: transparent aluminum! Maulten caught my eye, and would not let go.”

—Ted Landrum, Archi-Poet

Step

“On its own, it resembles one of Dali’s moustaches. As a series, it would weave a wavy wall. Imagine a garden wall made with these elegant Scarpa-esque bricks. In plaster it might break in two at the whimsical meander, but ductile materials – cast iron, or recycled caoutchouc – can do.”

—Ted Landrum, Archi-Poet

Lumi

“Triangles! Why not? Like the pyramids – very stable – and mysterious when light shines through the little window to hidden chambers concealed within.”

—Ted Landrum, Archi-Poet

Brickworks invited students to interpret theme(s) of Fabrications by making a creative artifact the size of a common brick. During the symposium all entries will be aggregated into an interactive group construct.

# ATMOSPHERE 10



Photo: Xue Wei



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