



**2019 INTERIOR DESIGN EDUCATORS COUNCIL
ANNUAL CONFERENCE PROCEEDINGS**

CONFERENCE HOSTS

Jane Hughes
Amanda Gale
Bill Furman
Jeanne Mercer-Ballard
Chris Smith
Gisele Taylor Wells
Cathy Nowicki
Alex Poorman
Rosa Otero
Katherine Swank
Angela Stephens-Owens

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Amanda Gale

ABSTRACT REVIEW CO-COORDINATOR

Helen Turner

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Hessam Ghamari

CREATIVE SCHOLARSHIP CO-COORDINATORS

Jihyun Song

PROCEEDINGS COORDINATOR

Jun Zou, Louisiana State University

2019 IDEC AWARDS

Council of Fellows Inductees

Migette Kaup, Professor - Kansas State University

Jennifer Webb, Associate Professor - University of Arkansas

Arnold Friedmann Educators of Distinction Award

Lisa Waxman, Professor - Florida State University

Presidential Award

Doug Seidler, Associate Professor - Marymount University

Susan Ray-Degges, Professor - North Dakota State University

Book Award

Deborah Schneiderman - Pratt University

Amy Campos - California College of Arts for *Interiors Beyond Architecture*.

Community Service Award

Suk-Kyung Kim and Linda Nubani

MSU-DNR Partnership for Sustainable Park Planning and Design

Media Award

Stephanie Zollinger - University of Minnesota

The Jack Lenor Larsen Oral History Project

Teaching Excellence Award

Milagros Zingoni, Assistant Professor - Arizona State University

IIDA 2018 Diversity Award

Vibhavri Jani, Professor- Kansas State University

JID Excellence in Scholarship

Amy Huber - Florida State University

JID 43.4 Exploring Hiring Practitioner Preferences for and Assessment Practice of Prospective Candidates

JID Outstanding Reviewer of the Year Award

Dr. Nisha Fernando - University of Wisconsin-Stevens Point

CONFERENCE AWARDS OF EXCELLENCE

Best in Category - Design as Art

Tad Gloeckler - University of Georgia

ROOM – Drawer #D1 and Drawer #D7 with Frame Base

Best in Category - Design as Interior

Christoph Korner - Woodbury University

Unbuilding Walls – German Pavilion 2018

Best in Category - Design as Idea

Igor Siddiqui - University of Texas at Austin

Popform

Best Presentation - Teaching & Learning

Jill Pable - Florida State University

Developing an Effective Statement of Philosophy Slowly, Carefully and Authentically

Best Presentation - Design Research

Laura Cole - the University of Missouri; Georgia Lindsay - the University of Colorado – Boulder *The Green Museum as a Teaching Tool for Sustainability: Design Strategies to Engage the Public in Green Building Education*

Best Presentation - Member's Choice

Migette Kaup - Kansas State University

Changing the Game

Best Poster Presentation:

Melissa Brown

Interior Design Elements in the Treatment of Patients Experiencing Psychosis from Schizophrenia

STUDENT DESIGN COMPETITION

Undergraduate Honorable Mention

Erin Childs, Hermine Maisie Leach and Sarah Randall
Radford University
SIOS

Third Place winner - Undergraduate

Amanda King
Yorkville University
Junctions

Second Place winner - Undergraduate

Laura Blythe and Laine Hertel
Purdue University
Crescendo

First Place - Undergraduate

Amanda Wegener and Cassandra Crawford
Purdue University
Flourish

First Place - Graduate Studio

Katherine Barrett and Gloria Hahn
University of Florida
RISE

TABLE OF CONTENTS

Panels

Scholarship of Design Research – Pedagogy

Flipping the design process: Preserving creativity and preventing burnout in studio

Stephanie Sickler, Assistant Professor, Florida State University

Helen Turner, Assistant Professor, University of Kentucky

Scholarship of Design Research – Social Impact

Effectively Teaching Universal Design in Interior Design Programs: A Panel Discussion

Eric Dolph, Assistant Professor, Buffalo State College

Beth Tauke, IDEA Center, University at Buffalo - State University of New York, Buffalo, New York

Dr. Sue Weidemann, IDEA Center, University at Buffalo - State University of New York, Buffalo, New York

Scholarship of Design Research – Practice

Developing Competent Professionals in Today's Digital World

Sally Ann Swearingen, Assoc Professor, Stephen F. Austin State University

Co-moderators Mitzi Perritt - SFASU; Leisha Bridwell - SFASU

Panel: Migette Kaup – KSU; Amy Roehl - TCU; Beth Miller – MS State; Ellen Fisher – NYSD; Julie Temple - Radford

Posters

Scholarship of Design Research – Culture

ACCULTURATION BY DESIGN: THE DEVELOPMENT OF FILIPINO RESIDENCE

Adrian Del Monte, Ph.D. Student, University of Florida

Dr. Nam-Kyu Park Sponsoring Faculty Interior Design Department College of Design Construction and Planning University of Florida

Making Space: Towards Best Practices for Makerspaces

Nathan Bicak, Assistant Professor, University of Nebraska Lincoln

The Millennial Office: Designing with Empathy

Julie Temple, Associate Professor, Radford University
Madeline Johann, BFA, Design, Radford University Class of 2018

Scholarship of Design Research – Open Track

'Light' and 'light': Metaphysical Forces on Materiality

Jun Zou, Associate Professor, Louisiana State University

A Post-Occupancy Evaluation Study about Indoor Environmental Quality Satisfaction and Learning Experience in Classroom Buildings

Suyeon Bae, Miss, University of Minnesota
Dr. Abimbola Asojo, University of Minnesota
Dr. Caren Martin, University of Minnesota

Erasure as Storytelling: An Additive and Subtractive Act

Margaret Davids, Student, Virginia Commonwealth University

Evidence Based Design Approach to Hotel Design for the Business Traveler

Connie Dyar, Interior Design, Program Coordinator, Illinois State University
Bailey Lushina, Graduate Student Illinois State University

Place-making and the Preservation of Historic Interiors in Global Cities: An Instrumental Case Study of Prada Rong Zhai, Shanghai, China

Chunyao Liu, Doctoral Student, University of Florida

The Migrant Workers Lounging Chair

Reem Aladham, Graduate Student, Woodbury University

Scholarship of Design Research – Practice

Differences in Interior Spatial Understanding between Physical and Virtual Environments

Xu Jin, Doctoral Student, University of Florida

Nam-Kyu Park, Associate Professor, Department of Interior Design, College of Design,
Construction, and Construction, University of Florida
Jason Meneely, Associate Professor, Department of Interior Design, College of Design,
Construction, and Construction

**Interior design elements in the treatment of patients experiencing psychosis from
schizophrenia.**

Melissa Brown, Graduate Student, Florida State University
Jill Pable, Ph.D., Florida State University

Scholarship of Design Research – Social Impact

Differences in Interior Spatial Understanding between Physical and Virtual Environments

Xu Jin, Doctoral Student, University of Florida

An Intergenerational Program: Building Mutually Beneficial Bonds.

Jessica Keegan, Graduate Student, MFA Graduate Student / Interior Design/ VCU

**Creating Authentic Experiences in Zoos: Exploring How Design Enhances Visitor Experience
and Animal Welfare**

Austen Whipple, Ms., Florida State University

**One Step Closer to Achieving Inclusive Design: Design Considerations for Clients with Low-
Vision**

Ashley Hughes, Graduate Student, Ball State University
Beth R. Miller, Ph.D., NCIDQ, ASID, IDEC Director and Professor, Interior Design Program,
Mississippi State University
Robin Carroll, CLC Instructor, Interior Design Program, Mississippi State University

School Environments: Controlling the Spread of Communicable Disease

Dawn Loraas, Instructor | Doctoral Student Architectural Studie, University of Missouri

Sensory Stimulation Boards for People with Alzheimer’s Disease

Joan Dickinson, Professor, Radford University
Carly Mannon, Undergraduate Interior Design Student, Radford University

Scholarship of Design Research – Pedagogy

Accessing the Creative Subconscious

Adam Nash, Assistant Professor, University of the Incarnate Word

Client-Based Learning Projects to Increase Intrinsic Motivation in Sophomore Interior Design Students

Natalia Albul, Associate Professor, IDEC

Promoting Active Learning in an Interior Design Lecture-Based Course

Hebatalla Nazmy, Graduate Student, Michigan State University

Suk-Kyung Kim, Associate Professor, Interior Design at Michigan State University.

Presentations

Scholarship of Design Research – Boundaries

Courtyard Redesigns of a Continuing Care Facility: Reflections on an Interdisciplinary Design Project

Elif Tural, Assistant Professor, Virginia Tech

Elizabeth Gilboy, Director, Community Design Assistance Center, Virginia Tech.

Nick Proctor, Project Manager, Community Design Assistance Center, Virginia Tech.

Kontessa Roebuck, Landscape Designer, Community Design Assistance Center, Virginia Tech.

Six Design Principles to Promote Inclusion in the Auditory Environment

Kristi Gaines, Associate Dean/Associate Professor, Texas Tech University

Angela Bourne, Professor, Fanshawe College Michelle Pearson, Assistant Professor Texas Tech

University Huili Wang, PhD Candidate, Texas Tech University

The Influence of Florence Nightingale's Environmental Theory in Modern Healthcare Design and Environment-Behavior Studies

Suining Ding, Professor of Interior Design, Purdue University Fort Wayne

Scholarship of Design Research – Culture

Looking Back to Look Forward: Navigating and Leveraging Institutional Legacy

Mary Anne Beecher, Professor and Chairperson, The Ohio State University

Object-centric and thing-ly histories: Exploring interior history from the human perspective

Bryan Orthel, Associate Professor, Indiana University

Obliquity and Design: Theories, Practices, Future Frameworks

Igor Siddiqui, Associate Professor, The University of Texas at Austin

Scholarship of Design Research – Open Track

Alone with others: A dialectical interplay of college students' needs and preferences at a University library

Daejin Kim, Assistant Professor, Iowa State University

Shila Bosch, Ph.D., Assistant Professor in the Department of Interior Design at University of Florida

Jae Hwa Lee, Ph.D., Assistant Professor in the Department of Interior Design at Iowa State University

An acoustical analysis of active learning classroom design using computer modeling and digital acoustic simulation

Stephen Skosrki, Assistant Professor, University of North Carolina - Greensboro

Design implications for patient outcomes in psychiatric units' seclusion rooms: A systematic literature review

Sara Bayramzadeh, Coordinator and Elliot Professor, Kent State University

Discovering authenticity in the retail store through the eyes of the millennial shopper

Elizabeth Calienes, MID, PhD Candidate, University of Florida

Experiential and technical considerations in developing virtual reality simulations for interior spaces

James Hopfenblatt, Ph.D. Student, University of Missouri
Dr. Bimal Balakrishanan, University of Missouri
Dr. Ehsan Naderi, University of Minnesota Mohammad Dastmalchi, University of Missouri

Identifying the Environment-Behavior Attributes in Healthcare Environment through the Lens of Environment-Behavior Studies Theories

Suining Ding, Professor of Interior Design, Purdue University Fort Wayne

Interior Design Faculty Position Announcements: An Analysis of Content

Amy Roehl, Associate Professor & Program Coordinator, Texas Christian University
Pamela Evans, Associate Professor and Director of Interior Design, Kent State University
Caroline Hill, Associate Professor, Texas State University

Lighting Conditions and Perceived Learning Experience Among Students in Classroom Buildings: A Post-Occupancy Evaluation Study

Abimbola Asojo, Professor, University of Minnesota
Abimbola O. Asojo Ph.D., Professor of Interior Design, University of Minnesota
Suyeon Bae MS, Ph.D. Candidate, Interior Design, University of Minnesota
Caren Martin Ph.D., Associate Professor Emeritus, Interior Design, University of Minnesota

Negotiating environmental challenges: How does older adults adapt to their environment?

Daejin Kim, Assistant Professor, Iowa State University

Supporting Environmentally Responsible Behaviors in Green Interiors

Erin Hamilton, Assistant Professor, Texas Tech University

Take the Stairs: Exploration of Older Adults' Intention to Use and Attitudes Toward Vertical Mobility Assistive Design Features

Elif Tural, Assistant Professor, Virginia Tech.
Nancy Brossoie, PhD, Senior Research Scientist, Center for Gerontology, Virginia Tech.
Helene Renard, Associate Professor, Virginia Tech.
Lisa Tucker, PhD, Professor, Virginia Tech.

The Design Educator as Campus and Industry Leader

Kristi Gaines, Associate Dean/Associate Professor, Texas Tech University

The Influence of Physical Design Features for Engaging Intergenerational Environments

Minyoung Cerruti, PhD, Washington State University

Scholarship of Design Research – Pedagogy

Calibrating color: Lessons from practice on understanding color in context

Genesis Okken, Lecturer, University of Florida

Margaret Portillo, Ph.D., University of Florida

Contradictory Discourse in Interior Design Critique

Mohammad Dastmalchi, M.F.A, University of Missouri

Dr. Robert Walsh

Dr. Bimal Balakrishnan

James Hopfenblatt

Empathy Quotient: Quantifying the Foundation of Design Thinking

Steven Webber, Associate Professor, Florida State University

Technology as a Tool: Assessing Interior Design Student Perceptions

Adam Nash, Assistant Professor, University of the Incarnate Word

The critical nature of design education.

Marlo Ransdell, Associate Professor, Florida State University

The Role of the Built Environment in Enhancing Student Resilience

Lisa Waxman, Professor & Chair, Florida State University

Gabrielle Waxman, Marriage & Family Therapist, Children's Home Society

Toward a framework for human-centered design education: Enhancing empathy through experiential learning

Steven Webber, Associate Professor, Florida State University

Stephanie Sickler, Assistant Professor, Florida State University

Transforming fears into creative action: Internal and external barriers to creativity of first-year university students

Jae Hwa Lee, Assistant Professor, Iowa State University

Margaret Portillo, Ph.D., FIDEC, Professor and Chair, Department of Interior Design; Associate Dean for Research and Strategic Initiatives, College of Design, Construction and Planning, University of Florida

Scholarship of Design Research – Practice

Assessment Tool for Users' Experience in Healthcare Settings

Yongyeon Cho, Assistant Professor, Iowa State University

Yongyeon Cho, LEED GA, WELL AP, Assistant Professor of Interior Design, Iowa State University

Jihyun Song, IDEC, LEED AP, Associate Professor of Interior Design, Marymount University

Case Study Exploring the Effectiveness of Unassigned Workspace at Workplace

Tina Patel, Professor, Algonquin College

Design Technology: Aligning Student Learning with the Expectations of the Profession

Amy Huber, Assistant Professor, Florida State University

Lisa Waxman, Ph.D., Professor and Chair, Department of Interior Architecture & Design, Florida State University

Design, Inspire, Promote: Creative Careers and Portfolio-Building on Social Media

Leah Scolere, Assistant Professor, Colorado State University

Perceptions from the Field: The Value of Soft and Hard Skills in Interior Design Practice

Lisa Waxman, Professor & Chair, Florida State University

Amy Huber, Assistant Professor, Florida State University

The Makerspace Library Connection: Designing an Elementary School Library That Rises to Meet the Needs of the Future

Nicole Peterson, Assistant Professor, Iowa State University

Scholarship of Design Research – Social Impact

Accessing Residents' Satisfaction with Housing Condition and Community Environments in Distressed Urban Neighborhoods

Eun Young Kim, Assistant Professor, University of Tennessee at Chattanooga

Apps for the School Safety: An Integrated Wayfinding System Development for the Effective Evacuation in Public Schools

Juntae Son, Ph.D. Student, Michigan State University

Suk-Kyung Kim, Ph.D. Associate Professor and the Director Interior Design Program School of Planning, Design, & Construction Michigan State University

Bridging the Gap: Connecting Student Preferences with Design Intention

Renaë Mantooth, Student, North Carolina State University

Rebekah Radtke, MArch University of Kentucky

Critical heritage-based programming (CHP): Constructing diverse knowledge

Bryan Orthel, Associate Professor, Indiana University

Does Access to a Green Classroom increase Eco-literacy? A study of two side-by-side fifth grade classrooms

Laura Cole, Assistant Professor, University of Missouri

Laura Zangori, Assistant professor of Learning, Teaching, & Curriculum at the University of Missouri College of Education

Effectively Teaching Universal Design in Interior Design Programs

Eric Dolph, Assistant Professor, Buffalo State College

Beth Tauke, IDEA Center, University at Buffalo - State University of New York, Buffalo, New York

Dr. Sue Weidemann, IDEA Center, University at Buffalo - State University of New York, Buffalo, New York

Establishing a Conceptual Framework Addressing Layouts and Services of the Built Environments in Continuing Care Retirement Communities with Capital Value

Jinoh Park, Ph.D. student, College of Design, North Carolina State University

Traci Rose Rider, Assistant Professor, College of Design, North Carolina State University

Home is where we age: Implications of housing design and home modification to aging-in-place

Jung-hye Shin, Associate Professor, University of Wisconsin-Madison

Tracy Schroepfer, PhD. Professor and Hartford Geriatric Social Work Faculty Scholar, School of Social Work, University of Wisconsin-Madison

Kevin Ponto, PhD Associate Professor, Design Studies, and the Director of Living Environments Lab, Wisconsin Instit.

Inclusive design assessment of state park buildings for senior citizens

Rabia Faizan, Inclusive design assessment of state park building, Michigan State University

Lighting a Fundamental Human Need: A Study of Energy Access and Lighting Usage in Rural India

Asha Hegde, Associate Professor, Texas State University

Measuring Perceived Retail Crowding (PRC) in retail environments through Functional near-infrared spectroscopy (fNIR)

Ekaterina Vladimirovna Korneva, Miss, Oklahoma State University

Tactile maps for visually impaired individuals

Stephen Skorski, Assistant Professor, University of North Carolina – Greensboro

The Gender Paradigm: a shift towards universal accommodation

Heidi Schlegel, Assistant Professor, Rochester Institute of Technology

The green museum as a teaching tool for sustainability: Design strategies to engage the public in green building education

Laura Cole, Assistant Professor, University of Missouri
Georgia Lindsay, Ph.D., Senior Instructor of Environmental Design at University of Colorado
Boulder

The State of Cohousing in North America

Jane Nichols, Department Chair/Associate Professor, High Point University

Scholarship of Design Research – Boundaries

Writing-Casting-Making: a transition from theory to making

Lois Weinthal, Professor and Chair, Ryerson University

Scholarship of Design Research – Culture

Body, room, home: design exercises on Perec's "Species of spaces"

Patrizio M. Martinelli, Dr., Miami University

Out of the Cafeteria, into the Agora: Designing Culture Change in the College of Law

Elizabeth Calienes, MID, PhD Candidate, University of Florida
Margaret Portillo, PhD, FIDEC, Associate Dean, Professor and Chair

Scholarship of Design Research – Open Track

"It makes the world a better place": Introducing non-Majors to Interior Design Problem-solving

JULIE E. N. IRISH, ASSISTANT PROFESSOR, IOWA STATE UNIVERSITY

A First Year Materials Workshop: Gaining Insight to the Properties of Wood through Making

Cory Olsen, Visiting Assistant Professor, University of Arkansas

Behind the Screen: A Study of Light and Shadow

Michelle Pearson, Assistant Professor, Texas Tech University

Jan Parker, PhD - Texas Tech University

Civility and Grace in Design

Anna Marshall-Baker, Professor and Interim Chair, Department of Interior Architecture at the University of North Carolina Greensboro

Community Engagement and Interior Design: Rehabilitation of the Warrior Hotel, Designed to Laud A City's Amerind Heritage Via the Stylistic Genre of Art Deco

Diane Al Shihabi, Associate Professor with Tenure, Iowa State University

Fostering Community through Cross-class Curricular and Co-curricular Interactivity

Patrick Lee Lucas, Director, University of Kentucky

Scholarship of Design Research – Pedagogy

DESIGN FOR DIGNITY AND EMPATHY: ROLE + PEDAGOGY + REFLECTION

Tina Patel, Professor, Algonquin College

Abimbola O. Asojo, Ph.D. Associate Dean for Research, Creative Scholarship and Engagement at the College of Design, University of Minnesota

Designing Hope: A process oriented design build studio

Milagros Zingoni, Assistant Professor, Arizona State University

Benjamin Ayers, Architect, Shipley BullFinch Molly Abbott, Senior Student at The Design School, Arizona State University

A Dose of Reality: A Capstone Project Framework Inclusive of Millennials, CIDA Standards, and the Profession

Susie Tibbitts, Assistant Professor, Utah State University

Steven Mansfield, Principle Lecturer, Utah State University

A step-by-step critical thinking decision tool for these complex times

Jill Pable, Professor, Florida State University

Believing is Seeing: Using Design as the Framework for Sketching Instruction with the Broad Curriculum Student

Jim Dawkins, Associate Professor, The Florida State University

Biophilic Design for Interiors: Integrating Biophilia into the Design Process

Lisa Tucker, Professor and Chair, Virginia Tech

Building Bridges to Interior Design Careers for Underrepresented K-12 Students

Abimbola Asojo, Professor, University of Minnesota

Abimbola O. Asojo, Ph.D., Associate Dean for Research, Creative Scholarship and Engagement and Professor of Interior Design, College of Design, University of Minnesota

Khanh Hoa Vo, MFA, Ph.D. Student, Interior Design, College of Design, University of Min

Changing the Game: Advancing Students' Research Skills to Prepare them for an EBD Future

Migette Kaup, Professor, Kansas State University

Collaborative Learning: Integrate Traits as a First Step in Interdisciplinary Studios

Jihyun Song, Associate Professor, Marymount University

Cameron Campbell, AIA, Senior Associate Dean, Associate Professor of Architecture, Iowa State University

Course Material of the Materials Course

Helen Turner, Assistant Professor, University of Kentucky

Stephanie Sickler, Assistant Professor, Florida State University

Cultivating Biophilic Design in a Healthcare-focused Interior Design Studio

Genell Ebbini, Assistant Professor, University of Minnesota

Developing an effective statement of philosophy slowly, carefully and authentically

Jill Pable, Professor, Florida State University

Drapes is a verb: Embracing the decorative elements of design through experiential learning

Stephanie Sickler, Assistant Professor, Florida State University

Enhancing and Utilizing Cultural and Global Perspective in interior Design Studio

Kyoung-Im Park, Associate Professor, Valdosta State University

From Slow Fashion to Slow Retail: A methodology for designing a sustainable retail culture

Rebekah Matheny, Assistant Professor, The Ohio State University

Historic Documentation Meets Technology

Kristin Maki, Assistant Professor, University of Alabama

Mr. Ian Crawford, Instructor Department of Clothing, Textiles, and Interior Design University of Alabama

Incidental Learning: How Paper Cranes and Surgeon Examinations Enhance Design Education

Laura Kimball, Assistant Professor, Radford University

Inside Out: theories and practices of interior design at work in exterior circumstances

Helen Turner, Assistant Professor, University of Kentucky

Inviting Diversity: Influential Lessons From Designer Sheila Bridges

Susie Tibbitts, Assistant Professor, Utah State University

Darrin Brooks, Associate Professor, Utah State University

Positioning the Design Problem to Activate Transformational Potentials.

Lindsey Bahe, Associate Professor, Interior Design Progr, UNL - College of Architecture

Jackie Bacon

Amanda Swartwout

Lindsey Bahe

Practice Makes Perfect (Almost): Affording Space to Build Collaborations

Roberto Ventura, Assistant Professor, Virginia Commonwealth University

Sequential Use of Narrative and Theoretical Pedagogy: Pathway for Conceptual Design Thinking

Susan Meggs, Associate Professor, East Carolina University
Katherine Swank, PhD Department Chair, Interior Design Jim Higgins, BS Graduate Assistant, Interior Design

Students consider design solutions to support stress relief and sensory engagement for adults with autism spectrum disorder (ASD).

CHRISTIANA LAFAZANI, Associate Professor, Virginia Commonwealth University

Systems Thinking Theoretical Model: Sustainability, Resilience, and Health/Wellness

Marsha Cuddeback, Director, Louisiana State University
Stephanie Clemons, Professor, College of Health and Human Sciences, Department of Design and Merchandising, Colorado State University
Grazyna Pilatowicz, Assoc. Professor and Assistant Chairperson, Interior Design Department, FIT/SUNY

Teaching beyond ADA compliance: It's more than just wheelchair circles

Christina Birkentall, Lecturer, University of Kentucky
Allison Carll-White, Ph.D., FIDEC, FIIDA- Professor, University of Kentucky
Elaine Eisenbaum, Ph.D, MSW- Training Director, Human Development Institute-University of Kentucky

The currency of the storyboard as a design ideation and communication tool

Jane Nichols, Department Chair/Associate Professor, High Point University

The future of biophilic design education: A concrete language for interior design students

Beth McGee, PhD, Georgia Southern University
Nam-Kyu Park, PhD, University of Florida

The Learning Spaces Studio: Interdisciplinary Collaboration and Enduring Engagement

Nathan Bicak, Assistant Professor, University of Nebraska Lincoln

Vanessa Q. Schutte, AIA, ALEP, K-12 Education Leader and Principal DLR Group

The THEORY tool box as a game changer in interior design education

Joori Suh, assistant professor, University of Cincinnati

Thinking with Our Hands: Re-examining the Role of Drawing in Design Curricula

Adrienne Wright, Visiting Assistant Professor, University of Central Oklahoma

TRANSFORMABLE DESIGN AS A MEDIUM FOR REPRESENTING THE SPACE-TIME DYNAMICS

Negar Kalantar, Assistant Professor, California College of the Art (CCA)

Transformations in Design Education: Helping Students to Become Leaders in Sustainability

Genell Ebbini, Assistant Professor, University of Minnesota

Scholarship of Design Research – Practice

Cold Call Binder Project: A Pedagogical Strategy for Affecting Professional Placement Outcomes

Cathy Nowicki, Assistant Professor of Interior Design, Highpoint University

Cathy Hillenbrand-Nowicki, Asst. Prof. of Interior Design & Visual Merchandising Design, High Point University

Spring Break Remix: Exploratory Immersion through the Interior Design Externship

Lindsey Fay, Assistant Professor, University of Kentucky

Scholarship of Design Research – Social Impact

A Studio Experience of Integrating Adaptive Systems to Create Transformative Urban Public Spaces

Mona Ghandi, Assistant Professor of Architecture, Washington State University, School of Design and Construction

Can We Design For Everyone? Embedding Social Responsibility Into The Interior Design Studio

Kevin Woolley, Assistant Professor, Purdue University

Creative Scholarship

Design as Art

ROOM - Drawer #D1, and Drawer #D7 with Frame Base

Tad Gloeckler, Associate Professor of Art, University of Georgia

Thinking Through Making: Containing Ritual

Linda Zhang, Assistant Professor, Ryerson University School of Interior Design

Design as Idea

“Salon”, The Interior as Ludic Space: Modeling Equitable Social Engagement

Alan Bruton, Associate Professor, University of Houston

A Table for Common Meal: A Ritual to Evoke Tension in Joy and Grief, and Perfection and Imperfection

James David Matthews, Professor, University of Tennessee, School of Interior Architecture

Emotive Intelligent Spaces

Mona Ghandi, Assistant Professor of Architecture, Washington State University, School of Design and Construction

Hexad

Jeffrey Day, Professor, University of Nebraska

Making Connections In The Space Between

Adrian Boggs, Instructor, High Point University

Performative Curtaining

Deborah Schneiderman, Professor, Pratt Institute
Annie Coggan, Adjunct Associate Professor, Pratt Institute; Principal at Coggan + Crawford
Architecture + Design in Brooklyn, NY

Popform

Igor Siddiqui, Associate Professor, The University of Texas at Austin

robotic printing

Jonathon Anderson, Assistant Professor, Ryerson University

Design as Interior

BLUEBARN Theatre

Jeffrey Day, Professor, University of Nebraska

CHANGING THE GAME IN HIGHER EDUCATION: Redesigning Spaces to Facilitate Creative Thinking and Collaborative Connections

Darrin Brooks, Professor, Utah State University

Daines, Mike, Assistant Professor of Graphic Design, Utah State University

F22 Foto Space

Jason Carlow, Associate Professor, American University of Sharjah

Otto Ng, Lecturer, University of Hong Kong; Principal, LAAB

UNBUILDING WALLS – GERMAN PAVILLON 2018

Christoph Korner, Chair, Woodbury University

Wildcat Hollow

Kimberley Furlong, Assistant Professor, University of Arkansas

Pecha Kucha

Bright Futures, Dark Futures: Envisioning the Consequences of Climate Change

William Mangold, Assistant Professor, Drexel University

Drawing down the bones: Five creative design processes adapted from Goldberg's methods

Lindsay Tan, Associate Professor & Program Coordinator, Auburn University

Interdisciplinary Housing Studio

Carl Matthews, Professor, Interior Design Department Head, Fay Jones School of Architecture + Design

Paper Folding in Beginning Interior Architecture Studio: Tactile Experience, Form, and Material

Jiangmei Wu, Assistant Professor, Indiana University

Recursion

William Biss, Assistant Professor Interior Architecture, Chatham University

Shifting the Paradigm

Daniela Chavez, Student, Arizona State University

Milagros Zingoni, Assistant Professor of Interior Design and Interior Architecture at Arizona State University

Swamp Pop Fusion – Teaching Interiors in the Muddy Terrain of a Multi - Disciplinary Curriculum

Nadya Kozinets, Assistant Professor, University of Louisiana at Lafayette

William Riehm, Associate Professor, University of Louisiana at Lafayette

PANELS POSTERS PRESENTATIONS

Flipping the design process: Preserving creativity and preventing burnout in studio

Stephanie Sickler, Assistant Professor, Florida State University

Helen Turner, Assistant Professor, University of Kentucky

Abstract

Problem: In practice, designers transition organically between phases of the design process. Often, several phases are in process simultaneously. The speed at which the design profession operates simply demands the fluidity of this practice. However, design education often follows a much more linear path to problem solving, especially in the early years of a program (Mattingly, 2011). Many times, students leave the important task of selecting and applying finish materials, the main body of aesthetics, to the very end of the process, or at best, push them to the back burner. Completing a studio project is an onerous task and leaving material selection to the end often results in selections that are free, quick, or easily selected from a design software's materials library. As a result, students become easily stressed and fail to meet the original design intent with their finish selections. This project queries whether the strict adherence to a linear design process can limit students' creativity by inhibiting their grasp of design behavior in practice. **Context:** Su and Cho found that intuitive students showed a decrease in creativity from the time of a project's inception to the completion of the final design (2018), implying that some students will naturally lose their creative focus by the end of a lengthy studio project. Therefore, a strict and linear design process approach may not meet the need for creativity elicitation among all students. Additionally, Huber et. al (2012) showed that the cycle of creativity is not unidirectional. Students benefit from circling back to parts of the design process based on feedback and critique. However, research also suggests that students in design programs are easily overloaded in studio courses, which can limit their ability to produce holistic design solutions (Soliman, 2017). Limiting creative potential while overburdening students with the demands of a project can have significant

negative consequences for student work products in studio courses. As an alternative, this project suggests that creativity can be captured at the outset of the design process and preserved for the duration of the project by reordering the instruction of phases in the design process beginning with aesthetics. Discussion points: This panel addresses the notion of flipping the design process in a studio environment to encourage students to begin the design process with FF&E selections. The goal of this shift is to support their ability to maintain their design intent throughout the duration of the project. This pedagogical shake-up would serve the purpose of not only modeling the design behavior students will utilize during internships and entry-level jobs, but could also circumvent potential student burnout and the common byproduct of end-of-project stress, thoughtless material selection, during the final modeling and rendering phase of their projects. However, there could be unintended consequences of such a shift. A healthy discussion is needed to evaluate the risks and benefits of such an avant-garde approach to studio pedagogy. Therefore, through meaningful discussion this presentation will explore strategies for maintaining creativity and design intent throughout the design process. Topics to be addressed by panel members include: • The practice of a flipped design process in studio and perceived outcomes • What causes students to “fall out of love” with their studio project and how can we prevent this • What are the inherent “dangers” in allowing design behavior to be discovered during internships and entry-level jobs rather than in the classroom • How can we best model design practice in a studio environment

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Effectively Teaching Universal Design in Interior Design Programs: A Panel Discussion

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Abstract

A recent National Endowment for the Arts sponsored survey assessed the status of universal design in interior design programs accredited by the Council for Interior Design Accreditation (CIDA) throughout the United States in order to establish an evidence base to allow educators to make informed decisions about universal design education. This interactive panel discussion will focus on findings from two key open-ended questions in the survey: - What are some particular strengths of universal design instruction as taught in your CIDA accredited program? - How would you strengthen the instruction of universal design in your CIDA accredited program? Findings from these questions will provide a framework for discussions on the following topics: 1. Innovative ways to incorporate universal design content into coursework 2. Effective infusion of universal design content at multiple levels of curricula including awareness, understanding, and application 3. Acquiring administrative support and funding for universal design education 4. Research needs in universal design education The panel will consist of 3 researchers who conducted the survey, an interior design educator with a notable history in addressing universal design concepts in the classroom, and an early career educator with an interest in promoting universal design. To begin the session, researchers will provide a summary of the survey findings. Subsequently, interior design educators will comment on their own experiences in relation to the findings. Audience members will respond to questions on the four items in the framework with verbal and post-it-note comments. Wrap-up discussion will summarize the four topics as discussed by the audience and panelists and will map possible next steps.

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Developing Competent Professionals in Today's Digital World

Sally Ann Swearingen, Assoc Professor, Stephen F. Austin State University

Co-moderators Mitzi Perritt - SFASU; Leisha Bridwell - SFASU

Panel: Migette Kaup – KSU; Amy Roehl - TCU; Beth Miller – MS State; Ellen Fisher – NYSD; Julie Temple - Radford

Abstract

How do interior design programs incorporate all the technology necessary to meet the needs of the interior design profession? The Interior Design discipline, involved in the design of the built environment, requires increasing savvy in digital media which presents challenges to interior design programs including: 1) What graphic and technical software is essential for entry level jobs in the field of interior design? 2) When and where do 4-year programs integrate various digital media into the curriculum? 3) What level of competency do the students have or need upon graduation? 4) How do faculty find time for training to become competent in digital media and computer programs, in general, in order to serve their students? 5) What budget issues surround the purchase of software and training? These are a few questions that interior design faculty ask as they juggle budgets and integrate computer programs within their curriculum. Standard 9 of the Professional Standards 2018 (CIDA, 2018) states students should be able to express project solutions using a variety of visual communication techniques and technologies appropriate to a range of purposes and audiences. Likewise, programs are expected to provide opportunities for student exposure to evolving communication technologies. Therefore, how should educators identify which programs to weave into their CIDA-accredited programs and where should they be implemented? From a brief survey of 10 interior design firms ranging from large (21 plus employees) to small (5-20 employees), a long list of 16 programs surfaced including Revit, CAD, Sketchup, InDesign, Spec Link, Bluebeam, Excel, PowerPoint, Word, and others. Computer-Aided Drafting and Design (CADD) technologies have become commonplace in architectural practice as tools of

efficiency and production (Doyle & Senske, 2016). Interior design educators understand there are many different facets of interior design, and students have to be versed in many programs to be marketable. As the Digital Native generation expands, interior design faculty must be selective in the number and types of software programs delivered to students to prepare them for entry-level positions. As Coleman states (2015), the future of interior design is “honed in on the ubiquity of technology and the vast technological literacy reshaping design education today.” The panelists will represent five different universities and reveal how the faculty select and determine which computer programs to emphasize in their degree plan. The list of discussion questions are provided in Appendix A.

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ACCULTURATION BY DESIGN: THE DEVELOPMENT OF FILIPINO RESIDENCE

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Dr. Nam-Kyu Park Sponsoring Faculty Interior Design Department College of Design Construction and Planning University of Florida

Abstract

Purpose of the Study: The current design thinking and cultural set up among Filipinos is generally influenced from centuries of colonialization. Preference over westernized design ideas, materials, and methodology are among the manifestation of these colonial influences (Ogura, Yap, & Tanoue, 2002). Acculturation doesn't only happen through immigration, one can be acculturated through constant exposure of foreign influence (Redfield & Herskovits, 1936; Berry, 2005) – that is what happened to the Philippines. The purpose of this case study is to explore the influence of design acculturation on vernacular residential buildings in the Philippines on its development and quest for identity. This research hinges on the interior built environment of the residential design in the Philippines, and the blurred edges between westernized and the traditional aspects of residential design as addressed by vernacular architecture, are explored. **Method:** A case study on Filipino residence was performed using data bases to explain and develop a comprehensive understanding of the multidimensional and dynamic development of acculturation in design as a process of change over time. Each approaches and protocol vary, others were random, and some are controlled. While the approach is largely qualitative, drawings and photos are used sequentially and analytically. Analytical points are grouped under themes and then discusses under thematic parts. **Results:** The results show that most of the selected primary studies: (1) are composed of behavioral studies on how individual and communities adopt to new culture and trends; (2) consist of elaboration on the interior built environment in the context of vernacular architecture; (3) tend to be more historical narrative and; (4) include a few coarse-grained data on heritage conservation and resiliency. The acculturation strategies (Berry, 2005) of integration and

assimilation were evident in most of the studies, this can be attributed to the centuries of continual exposure and adoption of new lifestyle under a colonial rule. Although the Filipino residences have evolved from pre-colonial to contemporary period, the data gathered suggests that the materiality and structural elements may have change, yet the core of the Filipino style still follows the norms of the vernacular architecture of the Philippines. A substantive research gathered on the residential design of the Philippines that characterized an ethnocultural multiplicity which tolerates cultural pluralism to exist juxtaposed with the rapidly growing metropolis that has certainly destabilized the long-standing construction practice of the traditional Philippine society. Preference over mechanical and equipment dependent residences against the natural passive cooling strategies of the vernacular design was favored among urban residents. In many places, the traditional bahay kubo (Philippine provincial cube house) and bahay na bato (stone house) was replaced by a more modern and light structured building despite the problems and adaptability issues. As a result, the vernacular design is being undermined and that the modern and westernized residences were over glorified as models and a status symbol. This poster presentation will show the results of the analytical points on how Filipinos adopt to the acculturated built environment as a learned behavior that changed the residential landscape of the Philippines along with drawings and photos of the development of the vernacular design and the acculturation to the westernized residences which were extolled as ideals and an indicator of socio-economic status destabilizing the long-standing design practices of the traditional Philippines.

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Making Space: Towards Best Practices for Makerspaces

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Abstract

Context and Problem Makerspaces were born from the Maker Movement, a DIY effort started by hobbyist engineers in the 1990s.(1) Makerspaces offer equipment and studio space to individuals and organizations who might not be able to otherwise afford it. They democratize small scale manufacturing through equipment like 3D printers, laser cutters and CNC machines, for the purposes of innovation and entrepreneurship. Makerspaces champion DIY fortitude to foster hands-on learning, problem solving skills, and economic opportunities for communities. Given their reliance on brick and mortar space, they are a unique facet of the sharing economy. However, few resources exist to assist communities with the design of a makerspace. The now bankrupt TechShop, a chain of open access DIY spaces, once offered workshops focused on establishing makerspaces. At a cost of \$4,500, would-be participants without financial resources were effectively excluded. Online resources like MakeSchools, an online alliance of universities and schools that showcases people and spaces engaged in maker culture, provides an understanding of the breadth of projects pursued by the movement (2), but again, there is little emphasis on best design practices. **Question and Significance** The principle question of this research project is: what constitutes best interior design practices for makerspaces and how can those principles be packaged for use by potential makers communities? Makerspaces are an emerging interior space typology that promise significant entrepreneurial and economic impact, but their spatial design lacks a critical framework that outlines the equipment, knowledge, and social programs that render success. In a review of spatial models, Will Holman asserts that significant growth in the typology is happening at a smaller, community based level, and that there are successes and failures of various models, but “no single set of best practices has yet emerged from all this churn.”(3) **Method** During Spring 2018, the principal investigator made site visits to nine makerspaces in five states, observing maker activity and

interviewing directors. Loosely scripted interviews focused on four themes: motivations behind starting the space, spatial organization, participants' making behaviors, and educational programming. These dialogues generated data about user demographics, space usage, training procedures, workshops, access policies, available equipment, frequency of use, types of built projects, and economic success stories. A qualitative content analysis was performed on the data gathered, which identified recurrent themes across all spaces. Conclusions Preliminary conclusions suggest that makerspaces are generating new forms of knowledge, new methods of working, innovative sharing processes, and unique learning opportunities. Strong cultural principles that emerged from the data include leveraging existing talent within the community and the importance of testing policies and being flexible when adjustment is necessary. The PI is currently developing a framework for best interior design practices of makerspaces. Early findings indicate that these principals include transparency, visibility to tools and materials, exhibition of work, the inclusion of dedicated design spaces, and a preference for workflow layouts over tool clusters. (see Appendix A) This poster presentation will share themes from the interviews and the developing framework, with support from photographic data collected at the spaces. This research project seeks to identify successful themes of case studies and make that information accessible and beneficial to communities wishing to establish makerspaces.

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The Millennial Office: Designing with Empathy

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Abstract

The Millennials, those persons born between 1981 and 1996 who became ages 22 to 37 in 2018 (Dimock, 2018) hold different expectations for their work environment than previous generations (Payton, 2015). This research seeks to answer the question, “Are they getting what they want?” by identifying desired design elements in corporate office spaces. The design process begins with information gathering in which the interior designer attempts to empathize with the client. This step facilitates the discovery of the best possible solution for their needs. “As a design thinker, the problems you are trying to solve are rarely your own—they are those of a particular group of people; in order to design for them, you must gain empathy for who they are and what is important to them” (Plattner, 2010). Underscoring this need for empathy is the fact that Millennials became the largest generation in the workforce near the end of 2015 and by 2030 they will represent nearly 75 percent of the workforce (Harmon, 2016). Payton (2015) describes attributes of this generation as confident, open to change, digitally connected, and self-expressive and their expectations and ways of living are influencing the build environment. So what do millennials want in the workplace? Massie (2014) and Playton (2015) identified several design features of the office environment trending as this generation entered the workforce: group seating for collaboration opportunities, high use of daylighting and the ability to vary the interior artificial lighting, views of nature, various seating options such as lounge chairs and booths, flexibility in space arrangement such as moveable walls and furnishings, highly integrated use of wireless technology, collaborative workstations, access to private “quiet” areas, full functioning kitchens, and visible branding such as unique statement pieces. The methodology used to identify recurring design attributes favored by these millennials as provided in the workplace was content analysis. Neuendorf

(2002) states that “A content analysis is an effective research tool when the amount and type of information is being sought”. Photographs of recent office interiors projects completed by top design firms were analyzed for the presence of favored design attributes. Ten design firms were chosen from Interior Design “Top 100 Giants Research 2017.” Starting with the design firm listed as number one and continuing until 10 firms were found, each firm was reviewed for the presence of an accessible website that contained a gallery of images from their corporate work. The ten design firms meeting this qualification were identified within the top 14 firms listed. [Table 1] For each of the ten firms, the first project listed under ‘corporate projects’ displaying images of interior office space in their online gallery on the date of 10/24/2017 were analyzed. A total of 78 images were viewed and the presence or absence of the desired interior elements were recorded. Table 2. lists 15 the design elements with the number of firms that contained these elements (expressed as a percentage). [Table 2] The end goal of this research was to determine whether millennials are receiving the design elements they are requesting. Analysis of the data reflects that they are.

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'Light' and 'light': Metaphysical Forces on Materiality

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Abstract

Light as an intangible being carries geometrical, physical, functional, spiritual, and symbolic meanings in interior and architectural design. This study focuses on how these meanings intertwine and work together to create and interpret interior spaces. The research method is a hybrid of case study and theoretical development. Inspired by American architect Louis Kahn's classics *Silence* and *Light*, we propose a two-level 'Light-light' framework to structurize Kahn's paradigm (Figure 1): the lowercase 'light' falls in the modern scientific framework and takes "shadow" and "darkness" as its derivative ("shadow belongs to the 'light'"). The uppercase 'Light' remains to be "the giver of all presences, by will or by law", where the will, the law, and the "ambient soul", "inspiration", "desire to express," reflect *Silence*. Ultimately, by the closing sentence: "... what man has made is – very, very manifestation of God." For Kimbell Art Museum, Fort Worth, 1972 (Figure 2), Kahn introduced spirituality to interior space by spreading the silvery natural 'light' across its vaulted gallery ceilings to metaphorically cast the heavenly 'Light' from the above. An even more explicit presentation of spirituality was created by a Japanese architect Tadao Ando -- Church of Light, Osaka, Japan, 1989 (Figure 3). A cross cuts out from a plain concrete wall. "Light from the cross penetrates the darkness within, and in interior space of such powerful centripetal orientation, this crack has the depth of a wall." "light and shadow impart movement to space, loosen its tension, and endow geometric space with corporeality." By design, the 'Light' is materialized through the Christian symbol--the Cross-- derived from a geometrical interplay between 'light' and darkness. It is not to be surprised that such a modern symbolic transcendence of 'Light' through 'light' echoes an oriental tradition on Yin and Yang. Also recognized by Kahn's daughter in *Beginnings*, the relationship between *Silence* and *Light* resembles that of Yin and Yang. Table 1 maps Kahn's original concepts to these two ancient terms through the proposed two-level framework. At the

lowercase level, Yin means shadow/darkness and Yang means 'light'. At the uppercase level, Yin and Yang correspond to Silence and 'Light' and loosely related to Greek “Becoming” and “Being”. Together, they form Taichi. Yin-Yang and Taichi have long been in the mainstream vocabulary through the history of China, forming the basis of cultural norms and aesthetic preferences that are related to but not necessarily fully justifiable by the modern scientific context. To quantitatively examine the tradeoffs between the two levels of light, we conducted a two-year measurement and simulation on daylight effect for two vernacular buildings in America and in China respectively, both located nearby the 30 degree latitude north parallel for a meaningful comparison. By modeling and simulating a range of lighting related design features, we conclude that some of the design choices are not scientifically optimal. In particular, the practice of the south-north orientation that is highly regarded in China but not in America, does not exhibit a decisive advantage over some other orientations, thus demands an uppercase level explanation, which is indeed readily available. In conclusion, distinction between the upper- and lowercase level of light open doors for new insights on Kahn’s theory and more holistic understanding of vernacular and modern interior design practice.

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A Post-Occupancy Evaluation Study about Indoor Environmental Quality Satisfaction and Learning Experience in Classroom Buildings

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Abstract

Overview A sustainable post-occupancy evaluation survey (SPOES) developed by a [university to be identified] interdisciplinary team provides an evidence-based quantitative analysis of occupants' satisfaction to direct attention to successful areas and areas that need improvement in buildings. The tested survey is an occupant centered and Internet-based questionnaire administered to study occupants' satisfaction in offices, classrooms, and residence halls in new or renovated state-funded buildings, required to meet sustainability guidelines. The SPOES questionnaire for classroom buildings has 11 Indoor Environmental Quality (IEQ) categories that contribute to overall occupant health. These categories include acoustic conditions, appearance, cleaning and maintenance, daylighting conditions, electric lighting conditions, furnishings, indoor air quality, technology, thermal conditions, vibration and movement, and view conditions. The authors present an analysis of IEQ data collected from nine classroom buildings to study the impact of IEQ category factors on occupant satisfaction. **Methodology** The SPOES consists of a self-administered, Internet-based, questionnaire completed by building occupants. Occupants rate their level of satisfaction on a Likert-type scale from 1 (very dissatisfied) to 7 (very satisfied). They also rate the influence of the physical environment on their perception of their learning experience and health on a scale from 1 (hinders) to 7 (enhances). Responses from occupants (N=1,912) of nine classroom buildings were analyzed to investigate students' perception of IEQ (see Table 1). In the questionnaire, 12 IEQ category factors identified above were rated by the occupants. **Findings and Discussion** The results show that students were satisfied with the 12 IEQ factors. They were

most satisfied with cleaning and maintenance ($M=6.16$) followed by vibration and movement ($M=5.99$) and indoor air quality ($M=5.97$) (see Table 2). The regression analysis of the 12 IEQ factors demonstrated that the higher the IEQ factor, the lower IEQ factor's standard deviation (SD) score ($B=-1.06$, $p=0.001$) (see Table 3 and Figure 1). This result indicates a relationship between the satisfaction score range, which becomes bigger when an IEQ factor receives a lower satisfaction score. To then investigate which IEQ satisfaction scores have an association with an enhanced learning experience, logistic regression analyses were conducted (see Table 4). The results indicated that the students who were satisfied (i.e., higher than 4.0) with the view conditions on the 7 Likert scale were 9.6 times more likely to perceive their learning experience was enhanced by the physical environment. Likewise, students who were satisfied with technology were 8.43 times more likely to perceive the physical environment enhanced their learning experience. In contrast, daylighting had the least impact on enhanced learning experience among the students ($OR=2.90$, $p=0.001$). Conclusion These results indicated that students were highly satisfied with the IEQ of their learning environments. IEQ factors were found to positively influence satisfaction and perception of the learning experience. Satisfaction with all the IEQ factors, especially, view conditions, technology, and electric lighting may improve students' perception of enhanced learning experience.

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Erasure as Storytelling: An Additive and Subtractive Act

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Abstract

Motivation In the simplest form, a pencil mark on a page is removed by a traditional rubber eraser. However, the marks are often never fully removed, and the paper thins with each attempt to rub out an old idea. But how does one erase a chair? A pilaster? A room? A building? More importantly, how does the subtractive act of erasing become an additive one? The historical fabric of a building is important; it is also imperative that it does not remain stagnant. Erasing is an opportunity to design an interior environment that both acknowledges the traces of the pencil marks and the eraser. It is an opportunity to learn from historic design strategies and thoughtfully transition into the present to create a living, breathing palimpsest (Plesch, 2015). **Problem** Current preservation policies and landmarking tactics arguably contradict preservationists' claims of promoting environmental, economic, and social growth within communities by exempting historical buildings from complying with codes and regulations which consequently bogart property that could be more sustainably employed. Historical preservation is largely based in social constructs; therefore, present policies should be reflective of societal changes. At times, the act of preserving often removes these buildings from the possibility of a relevant and functional future by attempting to keep them wedged within historical restraints (Avrami, 2016). **Method** Research of precedent incidents of erasure with applications to concepts involving historical preservation and restoration in the fields interior design and architecture will influence the design approach. These precedent studies will include works by Carlo Scarpa, Peter Zumthor, and David Chipperfield. To supplement these studies, other artistic disciplines and artists, including Robert Rauschenberg, will be researched to holistically comprehend approaches to the concept of erasing. The execution of explorations of erasing different objects and media to better understand the process of erasure will also be imperative. These experimentations will include the strategic erasing of pencil

sketches and common objects to investigate how to best represent an object that has been erased.

Preliminary Results The approach to erasing the historical fabric of a building is largely dependent on the building itself. This is evident in Scarpa's attention to the physical and metaphorical joinery of new and existing structures in his design of Palazzo Abatellis, Zumthor's weaving of old and new brickwork at Kolumba, and Chipperfield's use of exposed ruins in his design strategy for the Neues Museum (McCarter, 2013; Carrington, 2008; RYKWERT, 2009). The process of erasure within the realm of preservation is a constant and demonstrates how the act of erasing allows opportunities for the existence of something new (Katz, 2006).

Conclusion Choosing to re-program and systematically erase a section of a historically significant but outdated medical tower as a collective art studio space would introduce the opportunity to design an "erased space" as an environment for post-graduate art students to produce creative work. This space would strengthen the growing bond between a school of the arts and a historic medical school while contributing to the culture of the surrounding neighborhoods.

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Evidence Based Design Approach to Hotel Design for the Business Traveler

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Abstract

With the growing demand for business travel in a global economy can a hotel provide all the necessary tools for business travelers to support their ability to work directly from the hotel without having to look elsewhere for additional resources? According to International Data Corporation 75% of corporate workers are on the move; meaning that at least one day a week they have no steady work space. IDC puts the number of mobile workers world-wide at 1.3 billion. According to an article in the San Francisco Chronicle, many hotel chains such as Marriott, Westin and Meridien noticed that guests were trying to conduct interviews or presentations in the lobby of the hotel where free Wi-Fi access was available. The hotel and lodging industry is looking at how to make their hotel stand out as not just a place to sleep but work as well. A hotel project developed in an advanced graduate level design studio sought to develop a hotel that supported the work process of not only the registered guest but the community of start ups as well. Using evidence based design approach, a design was developed to meet the needs of both end users. The poster will demonstrate the methodology used in data collection, the quantifiable results and the impact of the results on the final design as shown in plans and 3-D renderings.

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Place-making and the Preservation of Historic Interiors in Global Cities: An Instrumental Case Study of Prada Rong Zhai, Shanghai, China

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Abstract

The preservation of historic interiors is a critical area of study within the field of historic preservation. Although exteriors are more publicly visible, interiors are significant in evoking people's emotions, memories, and sense of place (Jandl, 1988). However, historic interiors are one of the most fragile cultural resources, and largely suffer from deterioration, demolition, and improper modifications (Liu, 2016). This situation is exacerbated in global cities, where continuing economic growth and high-speed urbanization have created a shallow understanding of regional culture and place identity (Nijman, 1999). Consequently, place-making and the preservation of historic interiors in global cities is a challenging yet valuable issue to investigate. This project focuses on Shanghai, China – a global city with multi-cultural influences. In particular, it examines the garden villa, a type of residential building originally designed for western settlers in the early 20th Century. After World War I, when foreign traders left, Chinese residents took over and adapted many of these garden villas. Consequently, the interiors show cultural influences from both traditional Chinese architecture and Western historic styles like Neoclassicism and Art Deco, and are representative products of cultural interactions between the East and the West. The overarching methodological framework for this project is instrumental case study research. The unit of analysis is the recently restored Prada Rong Zhai in Shanghai. After six years of restoration, this 1918 Beaux-Arts style garden villa was unveiled to the public on October 12, 2017. This project serves as an apt case because of its location, the acclaim its restoration received, the combination of eastern and western detailing, and the transnational approach to its restoration. Within this case study framework, this project employs a variety of methods, including archival research, site analysis, and content analysis, to explore: 1) people's growing appreciation for the preservation of historic interiors in global cities; 2)

motivations, obstacles and challenges in the preservation of historic interiors in global cities; 3) and, how place-making can serve as a catalyst in promoting the preservation of historic interiors.

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The Migrant Workers Lounging Chair

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Abstract

The State of Qatar is a small Arabian peninsula on the eastern front of Saudi Arabia. The country is an arid desert region with extremely high temperatures all year round. Rainfall is scarce yet humidity is high. Despite its size, Qatar has the world's highest income per capita and is classified as a country with very high human development by the United Nations. This is made possible with extensive development projects through the use of Qatar's large population of expatriates, who comprise 88% of the total population. Qatar has also won the rights to host the 2022 FIFA World Cup, which has prompted a further influx of expatriate workers for mega-projects. The country's scorching heat means that air-conditioned malls are often the only respite in terms of leisure. It is also common for most shopping outlets to have families-only days in the weekends and family-only events. The systematic preference for families, combined with the lack of affordability of private transportation and high cost of entertainment leaves workers with a very limited choice of where and how to spend their free time. It is a common sight to see throngs of migrant workers standing around near landmark locations such as the iconic sea-view Corniche, for lack of alternative entertainment options. As media scrutiny, human rights abuses and international pressure mounts in Qatar, it has made some steps to cater to migrant workers. I have developed a seating concept that is a functional, long-term design and aims to provide a facility for migrant workers that is otherwise unavailable in densely populated areas or in iconic locations such as the Corniche. The seating design aims to facilitate communal interaction and to activate the beachfront or other landmarks where it is installed. A simple solution like this will not only solve the problem of large numbers of people standing around the city but also provide a comfortable area to relax, interact with others or to simply enjoy the view. The concept will contribute to the social and intellectual welfare of the large migrant-worker population in Qatar. To test my concept, I built a 1:1

wooden scale model of the chair to better understand how people would interact with it. The results proved the importance of such a design. The design is not only aesthetically pleasing, but also provides a shaded respite from the heat. The shadow also adds elements of aesthetics due to the canopy design. Since workers spend the majority of their time at work and in their shared accommodations surrounded by others, the seating configuration can be arranged to provide a sense of enclosure and privacy. The chair is constructed from environmentally responsible, non-toxic yet durable and weather-resistant materials. Recycled aluminum. Cushioning is provided by Breath-air which is a recyclable, durable, anti-bacterial and moisture-resistant fiber. The continuous, seamless design is further complimented by teak-wood finishing.

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Differences in Interior Spatial Understanding between Physical and Virtual Environments

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Abstract

Purpose of the Study: In recent years, Virtual Reality (VR) headsets technology has grown exponentially and is easily accessible to the public. Interior and architectural designers have used VR as a communication and design development tool to present design projects to their clients (Lubell, 2016). Researchers also have started using VR to simulate real space and to evaluate the authenticity of the virtual space (Kronqvist, Jokinen, & Rossi, 2016). Using VR in the design process is an innovative way to help designers understand the space quickly and access an alternative design plan, which helps the clients look, feel, and understand spatial qualities of a project even when a project has not yet been built (Czarnecki, 2016). VR has also been used to simulate the real world and people can see this simulation through VR devices. However, user's perception, observation, and experience have not been thoroughly tested. Therefore, the objective of this study is to investigate whether individual's perception and experience of an interior environment varies from real space (RS) to virtual space (VS).

Methods: An experimental study was conducted to compare the emotional states, spatial perception, readability level, realistic representation, and overall VR experience. Forty-eight participants were divided into two groups and observed a real environment first, and then each group observed one of two simulated virtual spaces by wearing Oculus Rift VR goggles. The real space (RS) is a renovated, axial symmetrical multi-media classroom. It is about 812 sq.ft. (28'6" x 28'6") with a ceiling height of 8'-6" and no windows. Two virtual spaces were photo virtual reality space (PVRs) and rendered virtual reality

space (RVRS). The PVRS was built by stitching multi photographs together into a 360 photosphere. The RVRS was built and rendered by Autodesk 3Ds Max 2017 and Mental Ray render machine with a 1:1 scale. Then, a 2 x 2 between subject factorial ANOVA was performed to analyze the difference between RS and VSs. Results: The findings show that the two virtual spaces represented the real space almost sufficiently; however, readability level in the PVRS was significantly lower than in RS. The overall spatial perception, and readability level were consistent from RS to VSs. However, for the emotional state, the VS was perceived as more arousing and less pleasurable compare to real space generally. The overall experience and realistic representation were consistent between two virtual spaces (PVRS and RVRS). The color simulation in the virtual spaces were perceived highly accurate and realistic comparing with the real space. Conclusions: Through this study, designers and researchers should be cautious about the following things when using photographs and rendered virtual reality space to simulate a real environment. First, this study used exposure fusion to compress photographs, so the lighting, details of the space were captured and maintained by this technology. However, this technology might also provide more color compression, which could alter results involving emotional states. This might also mislead the evaluation of color of a virtual reality space. Several factors should be considered when choosing VR as a research tool to compare physical reality and virtual realities. First, combining answers for the overall experience, respondents felt the lighting condition was well-simulated. Second, for these two technologies, (360 photosphere and 3Ds Max rendering), the 360 photospheres could be a useful tool for post-occupancy evaluation. Using 3Ds Max rendering to simulate virtual environments could help designers communicate a project still during the design process. Designers and clients could put themselves into the virtual space and test the design of the interior environment. Then, the designers could revise the design based on first-hand experience of the virtual space.

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Interior design elements in the treatment of patients experiencing psychosis from schizophrenia.

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Abstract

Considerable research has been conducted regarding how the built environment affects the physical aspects of a person's well-being. However, surprisingly little research has explored the psychological side, and even less research has explored how built environments affect people living with severe mental illnesses (Shepley & Pasha, 2017; Golembiewski, 2013). This is especially true for patients learning to cope with symptoms of schizophrenia. Schizophrenia is a psychiatric disorder that afflicts between 0.25% and 0.64% of persons in the United States, but the financial cost to the community is disproportionately high in comparison to other chronic mental and physical health conditions (NIMH, 2018). Typically, schizophrenia is diagnosed in early adulthood (late teens to early thirties). For a person with schizophrenia, "a fundamental defect... is a frequent inability to sort, interpret, and respond" to such external cues (Torrey, 2013, pg.13) which may be influenced by their physical environment (Golembiewski, 2013). This alteration of a person's senses is a well discussed symptom in the diagnosis of schizophrenia and is found in nearly two-thirds of all patients (Torrey, 2013). Whether visual or auditory hallucinations or a general blunting or enhancement of a person's senses, the way she/he perceives the world drastically changes. These dysfunctions can result in a "loss of coherence in the minimal sense of self" (Klaver and Dijkerman, 2016, p.1) and create extreme challenges for persons afflicted with this condition when trying to decode their complex environments. This suggests that there may be a relationship between patients with schizophrenia and their built environment that may influence the effectiveness of a patient's treatment, but the nature and strength of that relationship has yet to be determined. For example, if a person living with schizophrenia is over-stimulated with one or

multiple modalities (visual, auditory, olfactory, gustatory, or tactual) they may be unable to respond appropriately or understand what is required of them due to an excessive amount of internal thought and activity (Golembiewski, 2013; Torrey, 2013). This study intends to explore intersections of treatment, built environments, and the experience of schizophrenia psychosis, and begin to identify the specific design elements of the built environment that offer sensory affordances (visual, auditory, olfactory, gustatory, and/or tactile) to persons with schizophrenia that help them cope or make psychosis worse. These elements, once identified, could inform built environment design guidelines that in turn could be used to help patients manage their schizophrenic symptoms during psychosis more effectively. This study will address early adult patients. The research questions first seek to confirm that built environment characteristics affect patient well-being, define these influences in detail, and lastly gather data leading to design guidelines that might mitigate patient psychosis symptoms in treatment spaces. This MFA thesis study's methodology will involve interviews of psychiatrists and professional care-givers with experience in treating schizophrenia and psychosis. It will commence in October 2018 with results expected by January 2019. As the nature of this research is exploratory, a semi-structured interview methodology will be used to gather qualitative responses. The original research data will then be transcribed and coded for each research question, extracting observations from participants about their patients that reveal commonalities in psychosis response. This study is intended to help establish a foundation for future research in how the built environment might positively affect the treatment of persons diagnosed with schizophrenia. The results from the research may provide new insight into practical applications of design features to improve the spaces intended for the treatment of mental illnesses.

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A Supportive Home for Transgender Students

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Abstract

Transgender individuals are one of the most vulnerable populations in the world, when compared to the rest of the LGBTQ community. They are at a higher risk of harassment, abuse, and discrimination, especially because of their physical appearance and emotional vulnerability. Their continuous rejection and stigmatization affect their mental, emotional, and psychological well-being. Often, due to these circumstances, refuge is found in their home. It is a sanctuary, a haven, and the only place where they feel completely safe without the fear of judgement. There are an estimated 1.4 million transgender people in the U.S., according to analysis based on federal and state data. With a huge number of Transgender individuals, researching and understanding their needs, relationship with, and attachment to their home environment is important. We live in a gender-fixed world in which numerous standards and expectations have been set for both men and women to follow. Cultural and social norms dictate how one classifies their gender, which is expected to be either male or female. Yet, what about transgender people? They are left out of the conversation. The word “transgender” has been a taboo for many years and in many different cultures, its existence life-threatening. Such ignorance and dislike towards this gender have created numerous issues for transgender individuals living across the world. Transgender individuals have a gender identity that differs from the sex they were assigned at birth. They are commonly used under the umbrella term “LGBT” (lesbian, gay, bisexual and transgender). Research shows they are bullied in school as children and in college as adults. They can experience hate crimes from being beaten in a coffee shop, for example, to not being hired for or promoted in a job. Transgender people fight identity battles with their inner selves, society, religious beliefs, cultural norms, and political structures all by themselves. They have faced so much discrimination and hatred throughout their lives, that terms like fear, rejection, and anxiety are engraved in their subconscious

minds. They are physically or visually easily recognized, once they start coming out and decide to take further steps of transitioning. They exist in all cultures and societies across the world, (e.g., hijras or third gender in India, two-spirits in indigenous groups in North America). This thesis aims to understand the interior design factors that affect transgender student's needs in a residential space. It also focused to help them achieve the optimum level of privacy (Altman, 1975), which means the desired privacy level is equivalent to the achieved privacy level. The synthesis of a mixed-methods research methodology, including design literature, interviews with transgender individuals 18-25 years of age, and a series of observations forms the design proposal. The significance of the study is to raise awareness of transgender student's need for privacy, territoriality, and personal space and show how this can be accomplished in residential interior design. Findings can be used to study and apply on the students falling under the umbrella of transgender and gender non-conforming individuals.

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An Intergenerational Program: Building Mutually Beneficial Bonds.

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Abstract

MOTIVATION Two groups in American society today are floundering: adolescent children of low income families and the elderly. During the hours between 3:00 and 6:00 p.m., one in five children is unsupervised. Left to their own devices, many become involved in negative behaviors such as drug and alcohol abuse, sexual activity or in the worse cases, delinquency (Afterschool Alliance, 2016). It is proven that when children are left alone after school, they not only miss out on valuable learning opportunities, but also their parents are affected by losing as many as eight work days annually to resolve behavioral issues. In this negative cycle, businesses experience losses of up to \$300 billion a year (Afterschool Alliance, 2018). The other demographic group that is struggling is the elderly. Due to advanced medical care and better education, people are living longer (Singh, A., & Misra, N. 2009). After they retire from the work force, many find themselves with an unstructured routine. Friendships often fade. Connection with family may become less, and it may be difficult to form new relationships. These changes often result in feelings of isolation, loneliness, depression and even early death (Singh, A., & Misra, N. (2009). A solution to these two problems is creating an intergenerational program which brings different age groups together to participate in activities and cultural exchanges. This interaction enriches the quality of life for each. The elderly can bond with these youths through tutoring, mentoring, and sharing their life experiences, while gaining the social contact they would otherwise lack. The children can receive individual attention academically and emotionally, broaden their social skills, and benefit from their elders' life knowledge and experience (Bethesda Health, 2014). **PROBLEM** For every remedial dollar spent, three dollars are saved by increasing kids' learning potential, improving academic performance and reducing crime and delinquency (Afterschool Alliance, 2017). As funding for enrichment programs has been cut 100% nationwide (Afterschool Alliance, 2018) by the current administration, it is essential

to design low maintenance and sustainable buildings to reduce overhead and maximize funds to directly benefit the participants. **METHODS** Methods of research will include peer reviewed literature and case studies, including a program founded in Columbia, MD that helps disadvantaged children with at least one incarcerated parent achieve their dreams as well as an examination of local and regional afterschool programs. I also intend to create a survey for both adolescents and elderly to collect data on attitudes and expectations of intergenerational programming. **PRELIMINARY RESULTS** Intergenerational programs are beneficial to everyone in a community. By participating in such programs, both populations benefit by understanding and accepting the other's similarities and differences and mutual learning (Bethesda Health, 2015). They create a safer and more productive society and encourage upward mobility in economically depressed neighborhoods. For a relatively low investment, the return is tremendous. The major challenge of intergenerational programs is funding. **CONCLUSION** The research methods described above will support the design of an intergenerational clubhouse for the immediate community. The space will provide academic, social and values enrichment through supportive mentoring and the use of technology. And equally important, the clubhouse will provide a place of safety, comfort, trust, respect, and pride.

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Creating Authentic Experiences in Zoos: Exploring How Design Enhances Visitor Experience and Animal Welfare

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Abstract

Throughout history, zoos have provided humans with the ability to collect, maintain, and learn about local and exotic animals. Zoos play an integral role in conserving species, educating a broad population of people, and preserving critically endangered species (Hone, 2017). Modern zoos have continually sought to improve various aspects of the environment by balancing the care and welfare of captive animals and the experience and education of visitors. This effort comes from the desire to promote ideals of research, conservation, education, and entertainment while also establishing a level of value for maintaining animals and their habitats more authentically. "Zoo and aquarium design should not be simply about creating novel ways to house and view animals; it has to serve a greater purpose, one that engages our visitors in our conservation and animal welfare missions" (Chin & Gusset, 2016, p.1). This study explores interior, semi-interior, and exterior exhibits in Florida zoos to understand the spaces in which visitors interact with animals and to identify further opportunities. The goal of this research is to develop new ways of integrating the aspects of the visitor experience into unique and diverse settings aimed to satisfy the care and welfare needs of animals. Data will be collected through interviews and behavioral mapping in interior, semi-interior, and exterior exhibits within urban and suburban-classified zoos in the state of Florida. The points of interaction within each of these spaces will be assessed for authenticity by recording behaviors and activities relating to both animal welfare and visitor experience. The results of this study will be used to develop a unique design program which considers participation, benefit, and opportunity for animals and people within interaction points in zoo exhibits. The future of zoo design has the capacity to include a growing number of opportunities in which people can engage animals in more authentic circumstances. By studying and employing opportunities within interior, semi-

interior, and exterior exhibits, designers can effectively create spaces which satisfy and enhance the visitor experience while simultaneously supporting the needs of the animals. This will create a zoo experience that gives visitors and animals increased variety in their ability to authentically engage one another (Kemper, 2016).

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One Step Closer to Achieving Inclusive Design: Design Considerations for Clients with Low-Vision

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Abstract

Every design decision made throughout the design process can create a positive or negative experience within the interior built environment for a person with low-vision. Research has shown that it can affect the level in which they are willing to participate within that environment (Jenkins, Yuen & Vogtle, 2015). As designers, we strive to create an inclusively designed space to accommodate people with many different mobility, cognitive, visual and hearing ability levels. The question is, “Can we do more?” The number of people with visual limitations is expected to increase by 6.31 million by the year 2020 due to the aging population of baby boomers (Akpek & Smith, 2013) plus the addition of those who are genetically predisposed to have low-vision. This drastic increase elevates the need for consideration in the design of interior spaces to allow this combined population of people to safely and independently navigate and participate with the built environment. When the terms “inclusive design” and “universal design” are used in the design community, many professionals equate these terms to mean that they are designing a project that is compliant with the Americans with Disabilities Act. Interior designers abide by these requirements outlined in the ADA when designing projects to ensure access to those with limitations, but these requirements favor those with mobility limitations and only address the issue of protruding objects for those with vision limitations within the interior environment (Sokol, 2007). The purpose of this research is to contribute to the body of knowledge for the interior design profession by developing recommendations for designers to consider when designing a project to accommodate users

with low vision. Using a mixed method model, data collection will be both quantitative and qualitative. The following are the research questions. What are the participants with low-vision perception of lighting? What are the participants with low-vision perception of finish materials? What are the participants with low-vision perceptions of wayfinding? Demographic data including their low-vision diagnosis will be gathered in a manner based on a previous study completed by Barstow, Bennett and Vogtle (2011). A pilot study is being conducted prior to the collection of research data for the main evaluation. This study will utilize quantitative methods for items such as demographics, visual impairment data, and qualitative research using an observational study. For this pilot study, we will have approximately 15 participants who have vision limitations. A participant in the pilot study will include a low-vision consultant who also has a low-vision impairment. These participants will assess the validation of the study instrument and provide suggestions and modifications. A partnership with the low-vision center on our university's campus will be used as a resource and for participant recruitment. The location for the observation will be the lighting lab in the interior design program in which the research will be conducted. This is an interior space where the lighting can be controlled, different types of lamping will be provided, and assessment instruments all will be used for analysis. The poster will exhibit a graphic representation of data and information on a major issue that is facing the interior design profession today. The poster will list the key issues resulting in the need for the study. Research questions will be presented which guided the survey instrument development. Numerous charts will exhibit data collected that has implications in the study. Conclusions will be derived from the data and shown on the poster. The poster on display will open a dialog of discussion among educators from across the United States and Canada.

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School Environments: Controlling the Spread of Communicable Disease

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Abstract

Communicable disease is a broad phrase that often traverses academic, medical, and public health contexts and is usually addressed by the medical community through vaccines and behavior modification. However, interior design has the potential to contribute to a reduction in the spread of communicable disease through design of the built environment. Through material specifications and spatial design, designers determine the characteristics of every nook and cranny of the seen and unseen built world. Airports, medical facilities, and cruise ship industries among others have studied the detrimental impact of communicable diseases because of the large economic and healthcare costs associated with the spread of illness. Looking at how disease spreads in the built environment, one might immediately look to lessons learned in hospitals and other healthcare-related facilities. Schools are an ideal building typology for studying the relationship between humans, infectious agents, and the physical environment. Historically though, designers have focused on the creation of sustainable buildings for maximum performance with regards to materials, energy, and systems—not for hygienic performance. When children and teachers are absent from school due to illness, everyone suffers. A study by Ortega-Sanchez et al. (2012) explored out-of-pocket costs for families with school-aged children who became ill with influenza found that caregivers of hospitalized children missed an average of 73 work hours, while caregivers of children seen in the emergency department and outpatient clinics missed 19 hours, and 11 work hours, respectively. As well as the loss in learning, there was a documented economic loss to families, employers, and communities. While designers are knowledgeable about problem-solving and satisfying the needs of end-users, we are not well versed in the interaction of pathogens, human behavior, and buildings. Design has the potential to influence the microbiology of the built-environment with direct, critical implications for human health and well-being.

However, as noted by pediatricians, school nurses, microbiologists, epidemiologists, and others involved in industrial hygiene the impact of design on the microbial biography of buildings remains largely misunderstood (Adams et al., 2016; D’Arcy et al., 2014). Looking at the evidence understood by designers of hospitals and other heavily populated environments where healthcare is of great concern, there is much for designers of school environments and other educational facilities to consider. This means taking note of factors we cannot see. As designers, we need to initiate cross-disciplinary research about how schools can be designed to proactively inhibit the transmission of disease, just as healthcare designers have been doing. Design characteristics of the indoor environment related to space type, building arrangement, human use, movement, and ventilation sources have a significant influence on the structure of bacterial communities, which falls squarely in our disciplinary domain (Kembel, 2014).

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Sensory Stimulation Boards for People with Alzheimer's Disease

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Abstract

Alzheimer's disease affects over five million people in the United States, and 75% of those diagnosed will be admitted to nursing homes compared to 4% of the general population (Alzheimer's Association, 2013). Unfortunately, nursing home care and the associated built environment is often linked to boredom, agitation, lack of appropriate activities, inadequate stimulation, and passivity (Mansbach, Mace, Clark, & Firth, 2016). Indeed seeing residents wandering aimlessly or in an activity room watching TV despite short-term memory loss is a common occurrence in nursing homes and memory care units. While there is an emerging trend of incorporating activities that are experiential in nature and stimulate the senses, choosing appropriate activities for those who are in the middle to late stages of Alzheimer's is challenging (Jakob & Collier, 2013-14; Maseda et al., 2014). One resident who use to bake, for example, may enjoy kneading dough, while another might fiddle with tools. The difficulty lies in finding activities that appeal to all residents. The purpose of this poster session is to present sensory stimulation boards for those with Alzheimer's disease designed and built by an undergraduate, interior design student. The semester-long research project was completed to fulfill the honors capstone requirements at our university. During the first five weeks, information gathering, observations at two local memory care units, and interviews with three registered nurses occurred. The next five weeks consisted of conceptual development, continued refinement of the final design, while the end of the semester was devoted to prototyping and building (see Figures 1, 2, 3, and 4). The final solution includes three wall panels that appeal to sense of touch, sight, and sound. For panel one, colorful green and blue buttons juxtaposed against shiny silver buttons create visual contrast and interest. Individuals with Alzheimer's disease are attracted to shiny objects, while buttons reference long-term memories of helping a child

button their coat (National Institute on Aging, 2017) (see Figure 1). In panel two, zippers and fabric design an abstract flower. Soft-to-touch fabrics provide contrasting textures and the green and blue reference nature providing a calming atmosphere to reduce agitation. Observation and interview data reveal that residents often cuddle soft objects such as blankets and stuffed animals (Jakob & Collier, 2013-14), while the zippers provide sheen and sound (see Figure 2). The last panel consists of fabric-covered circles that turn creating movement and interaction (see Figure 3). The overall board design focused on the middle/late stages of dementia when following steps during activities becomes difficult. The soft, hard, shiny, fluffy textures generate touch, the zippers make interesting sounds, while the vibrant and softened hues appeal to vision creating a multi-sensory experience advocated for in the literature (Jakob & Collier, 2013-14; Maseda et al., 2014) (see Figure 4). The panels also provide different experiences for those who are sensory seekers or avoiders through their neutral background and variety (Jakob & Collier, 2013-14). This fall we hope to gain feedback from the prototyped design from nursing staff at local memory care units along with installing the panels in a memory care unit to determine their usability along with affect among residents. During the poster session, justification on panel design via the literature, observations, and interviews will be highlighted and preliminary results shared.

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Accessing the Creative Subconscious

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Abstract

Inspiration is an important aspect of the interior design process, particularly in the development of a conceptual direction for a new project. Within an interior design studio course, students generally conduct research and participate in the programmatic development prior to establishing a firm concept statement for a design solution. While there are a number of variations to the process, there is little research conducted on the origin of conceptual visualization. Specifically, what role does the subconscious mind play in the development of a creative design solution? This study is focused on the use of digital inspiration boards in commercial interior design studios to uncover meaningful design perspectives in a student's subconscious mind (Liu, 2018). Additionally, the goal is to engage students in a participatory, active-learning process while developing enlightened design concepts and building on previous design pedagogy (Ankerson & Pable, 2008). In the studio courses studied, students are given a vague, general project brief and are asked to begin general research regarding the project type and are then asked to compile a visual document composed of any images that are inspiring for them. Students are allowed to interpret the meaning of 'inspiration' as well as their own understanding of the project's goals. Following this process, students are asked to describe why they selected the images and/or composed the images in the way that they did. The potential exists for this process to reveal previously unknown creative inspiration from the student's subconscious mind and may be a beneficial process for future concept generation (Liu, 2018). The poster presentation will be a digitally-composed 24" x 36" presentation using Adobe Photoshop and Illustrator along with original course documents and examples of student work. This poster will highlight the existing literature relevant to the study goals, the initial research development and allows for engaging discussions regarding the proposed development process.

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Client-Based Learning Projects to Increase Intrinsic Motivation in Sophomore Interior Design Students

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Abstract

The purpose of the study is to evaluate how student intrinsic motivation is increased through a client-based learning project. Stemming from the study, this poster presentation will include information on the client-based learning project objectives, process and its stages, methodology, results, and the final product. Based on evidence, (Addams et al, 2010; Konkel, 2014; Rodriguez et al, 2016), first year interior design undergraduate students sometimes feel perplexed exploring whether it is the right major for them. Current generation students require more inspiration to stimulate their motivation. In particular, intrinsic motivation is paramount for students to be successful in their academic endeavor. For the scope of the study, intrinsic motivation as a construct “refers to doing an activity simply for the enjoyment of the activity itself, rather than its instrumental value” (Ryan and Deci, 2000). Founded upon these thematic concerns, client-based projects are expedient to stimulate studio-learning environment (Cooke and Williams, 2004). The study took place in one of the leading Dubai universities. Thirty-one (31) interior design sophomore students that constituted the study population sample were part of their first studio that was focused on interior design work. To accomplish a client-based nature of the learning projects, two classes, consisting of fifteen (15) students in one and sixteen (16) students in another, were assembled in groups of three (3) to four (4) students in each collaborative team. The project was created with real clients, and included real space to design. Specifically, an Admissions office of the University was in need of redesign, and became selected as a client-based learning project site. The project goal for the students was to create two proposals for the Admissions office: one was called “Reality”, and the other was titled “Dream”. The Reality phase was mainly focused on new surface treatment, furniture, and accessories. Nevertheless, in the Dream phase, students were requested to

propose an entirely new concept of the environment that may have included a new space planning. In addition to the group project nature, formal and informal interactions with clients took place where students received constructive feedback from real clients. The project culminated in formal presentations where university officials were present. Data were collected and triangulated through a semi-structured questionnaire at the beginning of the course, observations, and researcher-developed post-grading survey. Descriptive statistics was utilized to analyze the data. The survey was administered to 31 students, 30 females and 1 male, from 19 to 30 years of age. A significant response rate, in a number of twenty-four (24), was collected. The survey focused on intrinsic motivation in a client-based learning environment. The results indicated that the client-based learning project increased student intrinsic motivation by enhancing the students' sense of efficacy for a particular client and society in general. The majority of the students found that real clients provided additional stimulation to complete their work. Specifically, 100% of the sophomore interior design students found it very interesting working on client-based learning projects. Over 95% felt that they learned more because they had worked on client-based learning projects. Similarly, 100% of the students stated that client-based learning provided more importance and meaning to their studio work. Almost 90 % of the sophomore interior design students indicated the project useful, and expressed willingness to work on client-based learning projects should they have been given an opportunity. Importantly, approximately 90 % of the students signified that they had learned more due to the client-based nature of the project. In conclusion, the simulation of the professional environment in interior design studio format created intrinsic motivation for students

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Promoting Active Learning in an Interior Design Lecture-Based Course

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Abstract

Previous research suggests that students need to be exposed to different instructional methods to ensure a successful learning experience. The research also supports the concept that instructional methods should be accompanied by techniques to increase students' engagement in the learning process. Thus, it is widely accepted that facilitating active learning has positive outcomes on student's process (Dewey, 1916; Dale, 1946; Stinson and Milner, 1996; & Lalley and Miller, 2007). The learning pyramid developed by the National Training Laboratory in 2005 illustrates that active participation in the learning process is associated with higher information retention rates. The top four levels of the pyramid include passive teaching methods that are: lectures, reading, audio visual, and demonstration. The bottom three levels include active teaching methods that are: group discussions, practices by doing, and teaching others. This study utilized the quasi-experimental method to determine the causal relationship between active teaching methods and student's satisfaction with their learning experiences. Three interventions were introduced to students enrolled in a fundamental interior design course in a CIDA-accredited program in a state university. The interventions were aligned with the three bottom levels of the learning pyramid. First, one question per lecture was introduced to students using an online learning tool called Desire to Learn (D2L), which is a course management system adopted by many universities. This exercise was intended to fostering group discussions through answering an online question in which instant feedback is given within the lecture. Second, an in-class activity was added to one of the already existing assignments. In this exercise, students get to practice by providing information that they learned from the lecture before starting to work on the take-home assignment. This in-class activity was performed in the form of group work in which the instructor will give instant feedback to members of

each group. The third intervention is borrowed from previous research by Stevenson in 2017. This study utilized an image-based social networking site called 'Pinterest' to assist students' better understanding of the information presented in the lecture notes and text book. This assignment followed the learning by teaching approach which is represented as the bottom level of the learning pyramid. The Student Instructional Rating System (SIRS) is an online application that provides an opportunity for students to evaluate their courses. It is divided into five categories: (1) instructor involvement; (2) student interest; (3) student instructor interaction; (4) course demands; (5) course organization. To examine the effects of three interventions for improving students' participation in the course, this study compared the SIRS results between two years. The SIRS scores from the previous year were set as the pre-test result, and the current year scores were set as the post-test one. Additionally, at the end of the semester, students were asked to voluntarily participate in a short online survey that asks the questions about the three interventions and how they affected their learning experience. Results are expected to prove these interventions and provide the guidelines for improving the students' learning experiences in lecture-based courses in the interior design discipline.

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Courtyard Redesigns of a Continuing Care Facility: Reflections on an Interdisciplinary Design Project

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Abstract

Background and Relevance As the ability to collaborate with other disciplines is articulated as an imperative skill for designers (Fleischman & Daniel, 2013), it is getting even more important for interior designers to demonstrate their abilities to collaborate with people from different disciplinary backgrounds in order to increase the effectiveness of design teams. Also important is to gain collaborative experience by working in teams while at school, such as through university-community partnership projects. Correspondingly, the Council for Interior Design Accreditation (CIDA) 2018 Professional Standard 5 cites effective collaboration with multiple disciplines in developing design solutions as a required skill for design students, emphasizing representation of stakeholders, such as clients and community participants in the process (CIDA, 2018). While interior designers and interior design educators continue to seek opportunities to serve vulnerable communities, it is imperative to understand the ways in which interior designers can contribute to the interdisciplinary design teams. As the necessity to capitalize on strengths of different stakeholders to better deal with increasingly complex design problems is emphasized (Feast, 2012), less explored is the how unique set of skills and knowledge interior designers bring into multidisciplinary teams can help improve the physical environment of disadvantaged and underserved communities. **Study Scope and Objectives** This study's main objective is to report the process and outcomes of an interdisciplinary collaboration for the redesign of courtyards in a not-for-profit continuing care community. Conceptual planning and designs

are conducted through the university's outreach and design assistance center. The redesigned areas served residents of the memory care, assisted living and nursing care communities. The 7-person design team included faculty, designers and students representing interior design, landscape architecture and horticulture disciplines to incorporate the complex needs and expectations of older adults with physical and cognitive disabilities. This case study discusses the benefits and barriers with respect to interior designers' involvement in interdisciplinary projects, as well as community outcomes of this collaborative project. Method This study presents a detailed examination of the processes and products, by incorporating stakeholder perspectives. The project included a site inventory and analysis, a research synthesis, survey of staff members (n=38), and a visitor survey (n=22), and multiple stakeholder meetings. The systematic assessment of the project is based on analysis of the strengths and areas of improvement of the final project, and faculty, community partner, and student reflections to the process and final project. Outcomes and Implications Vision development, organizational capacity building, and value for potential future fundraising are discussed regarding community benefits while staff burden and input was discussed as an overlooked aspect of the project. Research-based design processes that are typical to interior design education and visual representation skills interior designers bring to the table are examined as primary benefits of having interior designers on such interdisciplinary teams. The significance of interdisciplinary communication skills is underscored as an area that needs further emphasis in interior design education. While this study is limited in its project scope, and the number of stakeholders involved in the process, it provides useful suggestions and lessons learned to interior designers who are interested in initiating such interdisciplinary community partnerships and provide design services to vulnerable populations.

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Six Design Principles to Promote Inclusion in the Auditory Environment

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Abstract

Introduction Auditory sensitivity is a common complaint for many individuals with neurodiversities. Multiple studies have identified auditory processing difficulties as the most prevalent sensory trigger for individuals on the spectrum (Grandin, 2006; Gaines, Bourne, Pearson, & Kleibrink, 2016; Ahburner, Ziviani, and Rogers, 2008; Tomchek & Dunn, 2007) Auditory sensitivities may be categorized as hyper-sensitive or hypo-sensitive. Auditory hypo-sensitivity in children often appears to be a hearing impairment, and the child may not respond when his or her name is called (Alcantra, Weisblatt, Moore, & Bolton, 2004). Hypo-sensitive children may enjoy making and hearing loud noises. Certain pitches or types of sounds are thought induce this oversensitivity. In contrast, children with hyper-sensitivities may become overwhelmed with loud noises. An individual may have a hyper-sensitive auditory system if they become easily distracted or over-react to unpredictable sounds. They frequently cover their ears to block out sounds that they find painful. The reactions to noise vary widely, and the same child may display hyper-sensitive reactions to sound at times and hypo-reactions at others. The purpose of this study was to develop evidence-based design recommendations for individuals with auditory processing sensitivities. By following the design recommendations, all individuals (not just those with auditory sensitivity) benefit from an auditory environment conducive for living, working, and learning. **Method** Sensory Integration (SI) theory provided the framework for this study. After a thorough investigation of literature, IRB approval was obtained. Data was collected using a mixed-methods approach including 1) interviews, 2) site analysis and observations (4 sites in the US in California, New York, Texas, and Ohio/4 sites in the United Kingdom) and 3) surveys. Over 600 individuals with sensory integration disorder and

their caregivers participated in the study. Findings/Relevance to Interior Design Through the data analysis, six predominant themes emerged to organize the findings. The six themes include 1) lay-out, 2) materials, 3) control, 4) construction, 5) music, and 6) predictability. Each of these themes were analyzed to produce practical recommendations for designers and users of interior spaces. Through the implementation of these recommendations, environments for individuals with auditory sensitivities and the general public benefit. If accepted, this presentation will explain each recommendation and provide practical examples for integration into interior spaces. For example, noise control should be addressed early in the planning phase of construction. However, even post-construction decisions can make a dramatic improvement in the auditory environment through the use of materials, control, implementing music, and enhancing predicability. The appendix provides some of the visuals that will be used to illustrate the findings.

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The Influence of Florence Nightingale's Environmental Theory in Modern Healthcare Design and Environment-Behavior Studies

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Abstract

Florence Nightingale was one of the first nurses to document the impact of the built environment on patients' medical outcomes. She wrote about sanitation, ventilation, and infection control in her book *Notes on Hospitals* (Nightingale, 1863). She also understood that environmental aspects such as light, color, and noise, along with nurses' supervision, significantly contributed to patients' medical outcomes. Obviously, Nightingale was well aware of the impact the built environment has on patients through her direct observations. How has Florence Nightingale's environmental theory influenced modern healthcare design and environment-behavior studies today? The findings of this research provided answers to this question. Nightingale's work had far-ranging implications for the next hundred years of hospital planning and design. Her principles and guidelines for hospital reform concerned the aspects of the maximum allowable width and length of a ward, the size of windows and their placement in relation to the bed, the overall ambiance, the ventilation and heating systems, and the use of specific materials and colors (James & Tatton-Brown, 1986; Verderber & Fine, 2000). The purpose of this research is to have a better understanding the influence of Nightingale's environmental theory in modern healthcare design and environment-behavior studies in healthcare design. This research took a qualitative approach with grounded theory methodology. The methods used for this research include literature reviews, observations and interviews in a regional medical center. Total eleven areas were observed including patient rooms, nurse stations, lobbies, waiting lounges, and the chapel as well as the emergency department. Twelve designers and architects were interviewed. As part of the grounded theory methodology, a three-stage coding paradigm is used to organize and analyze the data. The findings from literature reviews revealed that many environment-behavior studies in the healthcare environment

have given scientific basis to Nightingale's environmental theory. Many scientific studies have investigated how physical attributes in the built environment impact patients' medical outcomes (Rubin et al., 1997). A vast amount of scientific research findings has confirmed Nightingale's notions in her book. In addition, current studies also further advanced Nightingale's environmental theory by publishing more research findings not only the impacts of environmental attributes on patients' medical outcomes, but also on caregivers' job performance and healthcare organization operational efficiency. Findings from both observations and interviews revealed that many design attributes were in response to research evidence in order to achieve the best possible outcomes (Table-1 in Appendix). Although the literature reviews showed that the Nightingale ward has been eliminated in modern healthcare architecture, Nightingale's environmental theory has been sustained in nursing practice and modern hospital design. Today, many scholars criticize the Nightingale ward from the patient-centered care perspective. They argue that the Nightingale ward no longer meets the needs of modern healthcare because it lacks privacy (Verderber & Fine, 2000). Since the value of single-bed rooms has been acknowledged by the AIA after extensive research and has been included in the Guidelines for Design and Construction of Health Care Facilities (AIA, 2006), now all patient rooms have been designed for single occupancy in modern healthcare facilities. In recent years, research also has confirmed all the benefits that private patient rooms can bring to patients. However, the spirit of the Nightingale ward still influences the design of healthcare architecture today, which is evidenced by the integration of decentralized nurse's stations to have effective supervision and control over patients, which is the benefit from an open ward.

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Looking Back to Look Forward: Navigating and Leveraging Institutional Legacy

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Abstract

To impact others effectively, you must have a strong sense of your own identity. Changing the game also requires one to know the game—its rules and environments, and even its cheats. Whether your institution moves like a creeping glacier or a high-speed train, structural and philosophical changes are an inevitable part of academic life. Trends such as shrinking faculties and consolidation to create meta-departments in the name of cost savings and other efficiencies threaten to erase decades of legacy that ground many established interior design programs and connect them to their alumni. This research project studies one department's comprehensive effort to document its own fifty-year history for the purposes of reflection and projection. With nearly half of its faculty relatively new and a generation of emeritus faculty members now more than seventy years of age, the exercise of collecting, interpreting, and presenting institutional history as both fact and reminiscence creates specific challenges and opportunities. Knowledge of the past establishes a common understanding of generations of alumni experiences that contextualize their perspectives and expectations. It illuminates the nuances of reputation that a program may wish to embrace or reject as prospects for reinvention emerge in new contexts. Having a more vivid sense of a program's legacy can also help guide the strategic development of new vision and purpose by reducing the likelihood of unproductive circular moves. The point of the exercise should not be to elucidate the past in order to entrench, but mining memories for insight into how and why founding decisions were made can be used productively to frame pathways forward in purposeful and perhaps even poetic terms. The project took the form of a three-year long investigation using the methods of oral history, archival research, and visual story-telling. Video-recorded interviews and written correspondence provided "an ocean of stories" about this department's history, although not all information aligned in perfect agreement. (Linde, 2001, p. 72) Much of what was shared was "off

the record.” Institutional resources proved incomplete because collecting archival materials is not enforced or even encouraged by most universities due to constraints on storage space at the archive. Pleas for visual materials and memorabilia yielded a wealth of potentially rich sources, but the curse of outmoded technologies such as the prevalence of (often unlabeled) photographic slides and early low-resolution digital photos as evidence raised challenges when attempting to create an accurate timeline or cohesive graphic elements for display or printing using vehicles other than social media to share aspects of the history, as interpreted. Why does this matter in the context of changing the game? At its most basic, this case demonstrates the value of documenting the history of design education at the local level to avoid generalities and ambiguities that are inevitable when the paint brush that is too broad. There is no common genesis story when it comes to interior design, so subtle and not-so-subtle factors such as institutional setting and personnel qualifications are significant factors in the ways that the profession continues to evolve. Developing a more precise knowledge of our history creates an overt opportunity to form a “paradigmatic narrative” as a framework for partial stories while shaping public perception by demonstrating the evolution and growth of the profession. (Linde, 2001, p. 620) Also, it is increasingly important for design programs to use their own stories to reconnect with alumni to build a vibrant support network for current and future students and programs. Likewise, knowledge of the past encourages new and future cohorts of colleagues to coalesce around a trajectory of development, rather than feeling adrift or un-anchored.

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Object-centric and thing-ly histories: Exploring interior history from the human perspective

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Abstract

It is tempting to reduce interior history to physical characteristics and terse facts. For example, a house museum—full of carefully selected period furniture and material culture—tells the story of an idolized person or place. The interior may be aggressively cleaned of disharmonious elements and presented as a complete, idealized view of the past. The space, objects, and isolated moment of time are to be venerated. Such a historical interior presents a limited view of what is real, authentic, historical, and knowable. These types of spaces become three-dimensional photographs to be viewed and collected (similar to pinned online images or memorized facts). Interior history for the sake of history alone is incomplete. Interior history lacks diversity (Travis, 2018). What historiographic and theoretical frameworks should interior history borrow from other disciplines to become more whole? Context Design history has traditionally relied on object-centric approaches (deriving from art history, archaeology, and design disciplines' focus on physical outcomes) (e.g., Fleming, 1974). While the object-centric approach has scientific value for cataloging and establishing a canon, it privileges the object and maker over user and experience. Further, this approach preferences design by some and denigrates design from others. Interior history needs to acknowledge and examine diverse human experiences. Thing-ly history derives from Heidegger's exploration of things as moments of human understanding encompassing objects and ideas (1971). The thing-ly viewpoint was reshaped by Hodder (2012) who emphasized how things relate to people interacting with each other in constructing social meaning. In thing-ly history, designed spaces, objects, or ideas are recognized for enabling people to act and express ideas. Objects or spaces convey significant meanings as core aspects of human entanglement. The historiological difference between object-centric history and thing-ly history alters the focus and use of

interior history. Method The presentation uses theory from design history, philosophy, and archaeology to analyze a case example of a historic school. The case example is presented from two perspectives: as an object-centric history based on archival research and field observation and as a thing-ly history supported by oral history and participatory community engagement. The perspectives are referenced to contemporary historiography. Human-subject activities were reviewed by an IRB compliance board.

Outcomes The differing foci of the two perspectives underlie the consequences of historiographic choice. The object-centric history tells us about broad cultural, technological, and economic interactions linking the case example to events around the globe. This history emphasizes how humans are similar and affected by societal events. The thing-ly history reveals human meaning at levels closest to everyday users. They focus on the experiences of single individuals in day-to-day living. Meaning is developed in recognizing how these individual experiences accumulate into expressions of identity and myth. The thing-ly history discusses why people have acted as a consequence of a particular setting. Contrasting the two histories clarifies the theoretical ideas and highlights the approaches' uses. Advancement of design knowledge The consequences for how we write and use interiors history are provocative. Travis (2018) noted the exclusion of some lived experiences alters not only what is known, but design's place in broad society. Beecher (2015) similar explains how interior design influences human self-identity, politics, and societal perceptions. Both object-centric and thing-ly histories have uses in interior design. Historians (and designers) must be challenged to recognize which history is researched, what that means for what is known, how the use of history affects our consideration of problems, and how we critical engage with diversity and equity.

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Obliquity and Design: Theories, Practices, Future Frameworks

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Abstract

The proposed presentation is based on a scholarly investigation that links interdisciplinary theories of obliquity to the practice of design. It is particularly relevant in the context of the conference theme “Changing the Game?” which suggests risk-taking, disruption of norms, and out-of-the-box thinking. Likewise, as obliquity signals a change in direction to conducting business-as-usual it is also a helpful theoretical framework for evaluating disciplinary intentions and its consequences. The presentation seeks to (1) define obliquity as a theory, (2) explain the theory’s relevance to design thinking and creative practice, (3) explore existing precedents of obliquity as a method in art, architecture and design, and (4) articulate how obliquity can be used as a future framework for considering interiors. As a term, obliquity is defined by economist John Kay as the process of achieving goals indirectly. For Kay, a direct approach to problem solving works well in situations where objectives are clear, circumstances are predictable, and the range of options is fixed and known; problems with greater degrees of complexity, variability, and uncertainty benefit from approaches that are oblique. Obliquity, according to Kay, is a dynamic process of negotiating objectives, goals, states, and actions in ways that are nimble, multidimensional and open to open to adjustment. Kay argues that the achievement of quantifiable goals like financial profit is magnified when in service of higher-level of objectives like excellence, happiness, or greater good, while recognizing that such tall-order aspirations are not only immeasurable but also unattainable through any single direct approach. The interplay between actions, tangible goals, and high-order aspirations is thus necessarily nonlinear and inherently complex. Happiest people, Kay explains, do not pursue happiness directly, the most profitable companies are not the most profit-oriented, and the wealthiest people are not the most materialistic. Kay’s theory has applications in many realms, from financial markets to everyday life. One may intuit how obliquity may be relevant to design

thinking and practice, especially in spatial contexts with a plethora of unanticipated conditions, competing demands, and unknown factors. Design is a process that impacts lives in real time and the relationship between intention and impact is often unruly; good intentions are not always enough to yield satisfying results. Yet, what might an oblique design practice look like? How would it be defined? How would it work? A number of art and architecture practices from the 20th century in fact provide practical clues and conceptual foundations for addressing these questions. In this presentation, the author focuses on two distinct precedents: French architects' Claude Parent and Paul Virilio's oblique architecture from the 1960s as well as British musician/composer Brian Eno and painter Peter Schmidt's Oblique Strategies project from the 1970s. Both of these examples are avant-garde in nature – game-changing in their innovation, even if perhaps limited in mainstream influence. Parent/Virilio and Eno/Schmidt's work will serve as a gateway to discussing a number of associated creative practices that might be described as oblique in intent, including John Cage, George Brecht, Yoko Ono, Yves Klein, and others. These examples serve as precedents of creative methodologies, models of practice through which the theory of obliquity may be activated and instrumentalized. In the final section of the presentation, the author applies the insights from the theoretical analysis – based on both text and project-based archival evidence – toward the establishment of a framework for constructing new relationships between obliquity and interiors. To this end, a set of themes are identified related to the developing notion of oblique interiors as areas of further scholarly exploration and creative practice.

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Alone with others: A dialectical interplay of college students' needs and preferences at a University library

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Abstract

The modern university library has evolved into a place that supports both individual and social learning (Montgomery, 2014). While students may study, read, and work on assignments individually in the library, they also engage in conversations and collaborate with their peers (Soria, Fransen, and Nackerud 2014). Librarians recognize that students want to have social spaces within the library where they meet friends and work together (May & Swabey, 2015). In our quest to foster social learning, perhaps the pendulum has swung too far. How often do students work collaboratively versus studying individually? Empirical evidence about how students use libraries is crucial for understanding the full spectrum of their needs and behaviors. Using a mixed-methods approach, the objectives of this research were: 1) to explore students' specific behaviors in the library space and 2) to examine users' perceptions of the physical environment. By engaging students in data collection and analysis as part of the curriculum, the project also served as an exercise in understanding how post-occupancy evaluation sheds light on environment-behavior relationships. This research was conducted in a library on a public university campus in the southeastern US. The first floor was renovated in 2009 to accommodate students' need for collaboration. The 4th and 5th floors of the library provide quiet individual study areas. The roughly 26,000-square-foot space on the includes 754 seats in a large main seating area, a conference room and group study rooms. More than 70% of furniture sets in the space support group work rather than individual. We collected data using two methods - behavior mapping and an online survey. For behavior mapping, we used a "Workstudy +" iPad application to document the location and behaviors of students

in the library. During visual sweeps, we simply touched the screen of an iPad to note where each person was seated (or standing) and their behaviors. Behavior mapping data were recorded by graduate and undergraduate students during a 2-week period in 2016. The online survey, developed and pilot tested by graduate students, included three sections: use of the library, user satisfaction, and features that might be improved. 58 students participated in the online survey. The library is a popular study spot, but although there were complaints about the library being crowded, the data showed that the average occupancy rate was just over 47%. The utilization rate for each type of furniture was: individual benching (58%), V-desks for up to 2 people (52%); group tables (42%), high top tables (41%), conference tables (41%), armchairs (31%), and a sofa (23%). Overall, more than 3,800 behaviors of 13 different types were recorded. Interestingly, individual work was the most commonly observed behavior across all furniture types. Survey data supported observation data, in that the vast majority of students reported that they engaged in “individual study” (93%) while at the library, as well as “meeting with group members” (69%), “socializing” (45%), and “taking a break between classes” (45%). Oddly enough, respondents were most satisfied with the “size of work space” and least satisfied with “sense of crowdedness”. When asked about what could be improved in the library, participants pointed to “noise levels”, “furnishings”, and “privacy” issues. This research demonstrated the dialectical interplay between students’ desire to be alone and their desire to be with others. Students seem to enjoy being in an open and group-oriented workspace, even when studying alone. However, our findings raise questions as to whether we are providing enough acoustical control and privacy. This presentation will provide empirical evidence about how engaging students in a post-occupancy evaluation led to a better understanding of what today’s college students expect in a library, perhaps sparking new ideas for their redesign.

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An acoustical analysis of active learning classroom design using computer modeling and digital acoustic simulation

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Abstract

Traditional methods of classroom instruction are largely based on one-directional passive learning scenarios where the teacher lectures to a class from the front of the room while students sit in uniform rows of desks facing the teacher. Recent shifts in pedagogical methods have challenged this approach by promoting a more interactive learning environment where multimodal communication is the norm and collaborative learning is the expectation. Often referred to as Active Learning, this system of teaching is characterized by flexibility of room setup, multi-dimensional content delivery methods, and the establishment of a participatory environment. Interior designers have responded to this shift by rethinking classroom space planning and furniture selection in order to facilitate these new teaching methods. While there is evidence to suggest active learning techniques and their corresponding classroom spaces can increase learning efficacy (Chiu and Cheng 2017), there is a lack of study related to the implications on the classroom acoustic environment. Traditional classroom design dictates that both the primary sound source (teacher) and primary receivers (students) remain relatively stable. One advantage of this stability is it provides a certainty regarding the source-receiver sound paths and consequently the acoustic characteristics of the space are highly predictable. In an active learning classroom, the spatial relationship between the teacher and students has a high degree of variability, which in turn creates a complex acoustic environment. The relationship between classroom acoustic conditions and effective learning is well documented (Rosenberg 2010). An appropriate acoustic environment becomes even more important when instruction is directed at young children (Klatte, Hellbrück, Seidel, and Leistner 2010), special user groups (Crandell and Saldino 2000), and for those learning in a non-native language (Neave-Di Toro, Rubinstein, and Neuman 2017). This study uses

computer modeling and digital acoustic simulation to analyze the implications of active learning space design as related to room acoustics. Specifically, speech intelligibility, characterized by the Speech Transmission Index (STI), was the focus of this investigation. STI values are indexed in a range between 1=excellent and 0=bad. STI was the focus of this study as it takes into account other major room acoustic parameters such as background noise level and reverberation time. The analyzed classrooms are modeled in SketchUp and the acoustic simulation is done through the Enhanced Acoustic Simulator for Engineers (EASE) software. Using room design recommendations from major furniture manufactures as a basis-of-design, classrooms of various sizes, geometries, and furniture layout are studied. The STI measurements indicate that room geometry, room volume, surface materials, and furniture placement all have impacts on the quality of the acoustic environment related to speech intelligibility. Additionally, room geometry appears to have a more significant impact once the ratio of room length to width becomes too great. Within each room, an array of STI values was documented. These typically fell within a range between excellent to fair. When compared to traditional classroom designs of a similar seating capacity, often the minimum STI measurement in the active learning classroom was lower than the traditional room. The results indicate that innovative teaching methods and subsequent room designs should not ignore recommended classroom acoustic characteristics even though the recommendations were developed within a traditional classroom setting. Room arrangement flexibility and teaching delivery method should be balanced with established acoustic design recommendations in order to ensure a proper learning environment. During the presentation, room images, models, and STI measurement plots will be presented similar to Appendix A.

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Design implications for patient outcomes in psychiatric units' seclusion rooms: A systematic literature review

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Abstract

A seclusion room is a room design for temporary confinement of patients with mental disorders who are under extreme condition exhibiting violent threats to themselves and others. Given that patient safety is the first and foremost concern in psychiatric units, it is critical to incorporate therapeutic features in the environment in order to provide a holistic healing environment. Patient safety is secured by implementation of anti-ligature fixtures and furniture to reduce the chance of environment acting as a resource for self-harm, injury, and the like. Seclusion rooms requires strict safety measures, as it designated as a place where an agitated patient can take the time to pass the agitation episode (Bayramzadeh, 2017). Nonetheless, seclusion rooms severely suffer from the lack of therapeutic features. Given the lack of lack of research on therapeutic aspects of seclusion rooms, it is critical to study how therapeutic design features can be incorporated in seclusion rooms further. This study aims to explore the role of the physical environment on patient's psychological and physiological outcomes. This study utilized a systematic literature review approach to explore the status of evidence available on seclusion rooms' influence on psychiatric patients. The systematic literature review criteria consist of literature published from 1980 to 2018, including the following keywords: seclusion room, design, environment, physical environment, interior, psychiatric units, patient, agitation, safety. The results showed studies on the environment of seclusion rooms in regard to patient outcomes are scarce, and there is a need for more research evaluating the implications of design on psychiatric patients' psychological and physiological outcomes. There is a lack of research in the area of seclusion room design, as the current literature also relies on best practices, with no scientific validation. Some of the environmental design features recommended or evaluated in regard to patient outcomes included use

of calm colors (Karlin & Zeiss, 2006) and interior decorations (Vaaler, Morken, & Linaker, 2005). The results inform the future research regarding ways to promote human-centered experience in seclusion rooms and improve therapeutic aspects of the seclusion rooms.

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Discovering authenticity in the retail store through the eyes of the millennial shopper

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Abstract

Context. The competitive retail environment is facing significant struggles with store closings, the rise of new store formats, and merging of online/offline purchasing options. Retailers continue to seek out strategies they can use to keep shoppers coming to the store. The millennial shopper, in particular, has proven to be a different type of shopper that is more outspoken, demanding, less loyal to brands and skeptical of brand advertising. They have been recognized for placing value on authenticity and experiences over goods (Schawbel, 2015), which presents a unique opportunity for designers to create retail environments to entice them. Prior studies have explored elements that attract the attention of this shopper (Calienes, Carmel-Gilfilen, & Portillo, 2016) and others have explored the concept of authenticity in retail design from the perspective of historic preservation (Plevoets & van Cleempoel, 2010). However, authenticity is a complex, layered and abstract concept that many find difficult to define (Plevoets & van Cleempoel, 2010), and although it is a goal of many attempting to reach this cohort, limited research exists on how to truly define what makes an experience, a design or a store 'authentic' to millennials. This study aims to understand how millennial generation shoppers define authenticity in the retail store and identify what elements contribute to building the perception of authenticity. Method A computer-based survey was used in a lab setting within a university's business school. Participants (n=139), ages 17-36, were asked to view images of retail environments and respond to questions about how authentic/inauthentic they perceived the stores to be, and write a short statement explaining their response. They were also asked to identify emotions or feelings that the image evoked, including being transported, or personally connected. The 20 store images shown were selected to represent personal and non-personal goods, as well as multiple product categories,

including: apparel (male and female), footwear, jewelry, technology, personal care/cosmetics, home goods, and books. In an effort to understand if there was a relationship between the shopper personally and their perception of authenticity, participants were also questioned on their sense of narcissism/altruism, shopping style (utilitarian vs. hedonic), and attachment style. Findings Preliminary data analysis suggest that this generation defines authenticity as unique, transparent and original. Among emotions provoked were curiosity, relaxed, cozy and comfortable. Initial results found no statistical significance between self-connectedness, narcissism or feeling of being transported and their perception of authenticity. This study also suggests that millennials find a connection between the historic elements and the perception of authenticity, given the amount of responses related to elements that were described as 'rustic', 'old-fashioned' or 'vintage'. Conclusion Millennials have been described as an elusive generation and one difficult to keep engaged (Sullivan & Heitmeyer, 2008). As brands try to find new ways to connect with this cohort, the retail store has gained significance in being a key place to engage them. Designers will be better able to deliver human-center designs in the retail space by using strategies, such as crafting authenticity, that engage this shopper. This study relied on photography as visual stimuli as an appropriate method for evaluating the retail store, given that visual merchandising and stimuli are highly effective for shopper engagement. However, the qualitative responses received through this study set the stage for an expanded, holistic approach to examining to concept of authenticity in the retail space. The retail store is the only communication medium that can immerse the shopper in a holistic way and it will be beneficial for further studies to capture shopper perceptions in this environment.

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Experiential and technical considerations in developing virtual reality simulations for interior spaces

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Abstract

Interior designers often rely on 3D software which represents interior space in a non-immersive fashion. Unlike traditional 3D tools, Virtual Reality (VR) adds an experiential component that maximizes spatial presence (Balakrishnan, 2007) and enables exploration of interior spaces from an ego-centric point of view. Vorderer (2003) defines spatial presence in a two-step process involving the delivery of media cues to the viewer, which leads them to locate their primary egocentric reference frame (PERF) within the mediated space. While architects investigate built form from a third person point of view, interior designers need an ego-centric, first-person point of view to evaluate experiential qualities of space. While VR is ideal for this, to effectively take advantage of this rapidly evolving medium, interior designers need to focus on two key considerations while creating VR simulations and applications for interior design. These considerations are drawn from over a decade of empirical research and creative projects involving virtual reality in our research group and include attention to 1) representational qualities (photorealism, level of detail) and 2) functional affordances (navigation, interactivity, usability). To illustrate these ideas, we present a virtual reality simulation we developed to showcase a virtual exhibit commemorating the 175th anniversary of a mid-western university. The original exhibit “Faces and Places” was on display in 2014 and celebrated the historical dresses of people who were essential to the establishment of the university, as well as many of its most prominent buildings and interiors. Included in the exhibit were four historic costume pieces. Kalisperis et al. (2006) has shown the importance of photorealism, level of detail and wide field of view in enhancing spatial presence and

understanding. Building on this understanding, we used a variety of 3D capture and creation techniques to achieve high representational isomorphism. These techniques include a seamless transition from high quality, 360-degree images into 3D-modeled spaces (Figure 1); 3D scans of key spaces and historical artifacts; precise material and texture capture for recreation of artifacts; high-detail 3D models of interior architectural components and features; and thoughtful recreation of lighting and its interaction with materials (Figure 2). Balakrishnan and Sundar (2011) have shown that navigability affordances and environmental constraints along with narratives can enhance both spatial presence, spatial situation models and enjoyment. Functional considerations refer to the methods utilized to allow viewers interaction with the virtual exhibit. These included: navigation, interactivity, and usability. For navigation, users were presented with naturalistic locomotion controls and instructions; constrained paths and limited spaces through which to navigate; an on-screen mini-map for location finding (Figure 1). For interactivity, users could access an on-screen, proximity-based heads-up display that provided information about the historical costumes; users could teleport to the places named after the historical figures (Figure 3). For usability considerations, menus were kept simple, uncluttered and limited options were given through the entire experience. 3D models were simplified where needed to maximize speed and interactivity. This project and the underlying theoretical considerations can provide interior designers a road-map for developing virtual reality simulations that enhance experiential congruence with a corresponding real-world environment whether built or in the process of being built.

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Identifying the Environment-Behavior Attributes in Healthcare Environment through the Lens of Environment-Behavior Studies Theories

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Abstract

Environment and behavior (EB) study has an interdisciplinary orientation (Altman, 1975; Rapoport, 2005). Like Altman (1975) wrote, the field of environment and behavior is intrinsically interdisciplinary and the work of environment-behavior studies comes from a variety of social and natural science disciplines, such as psychology, sociology, geography, biology, and anthropology, and from applied or practitioner disciplines, such as architecture, urban planning, interior design, and landscape architecture (Altman, 1975). Rapoport (2005) identified nine EB mechanisms that link people and environments: physiology, anatomy, perception, cognition, meaning, affect, evaluations, action and behavior, and supportiveness. Within these mechanisms, issues of environmental stress, territoriality, privacy, wayfinding, restoration, control, efficiency and many other issues are included and researched in EB studies. As Rapoport (1990) states, in EB studies, the emphasis is on identifying the attributes in supportive environments and a set of specific attributes can be tested against the research evidence. Due to the blooming of the healthcare industry, a vast amount of EB research that relates to healthcare environment has been conducted. Therefore, identifying EB attributes in healthcare environment plays a significant role in the research and design process. What are the EB attributes in the healthcare environment for specific typologies, such as types of specialization (e.g. pediatrics) and types of care (e.g. intensive)? This question has been investigated by this research through the lens of environment-behavior studies theories. According to Rapoport (1990), EB attributes are the characteristics of a supportive environment. For this study, EB attributes are derived from the existing EB research and they provide the framework for the analysis. The research methods employed for this study are literature reviews and observations. When searching for research evidence that links to the EB attributes, many

sources are searched including Google Scholars, knowledge repository at Center for Health Design website, ERIC, PubMed, ProQuest, Academic Search Complete, Art Full Text, Avery Index, Art Stor, and Scopus. Whether the healthcare environment has, the characteristics of supportive environment also have been examined through observations at a regional hospital. Compiling research evidence that links to the EB attributes helped to investigate whether research evidence was implemented in the design through observations. The research findings of this study came out of a triangulation method by using multiple sources of data. Based on the literature surveyed, the most important EB attributes in healthcare environment were identified. Findings show that the EB attributes with strong research evidence include environmental stress, wayfinding, control, privacy, territoriality and personal space, design preference, efficiency and restoration. In order to provide a clearer presentation of the findings of this study for the context of EB attributes, a chart is created based on the evidence of literature surveyed (Table 1). The chart depicts specific environment behavior (EB) attributes with the supporting empirical BE studies literature. These EB attributes also have significant links with specific building typologies. A lot of EB research evidence appears to have a generic application in the design of different types of healthcare facilities. Based on the observations, it is clear that a lot of research evidence was implemented through design innovations in this facility. The design attributes observed correspond to published research evidence in order to achieve the best possible outcomes. In summary, given the interactive relationship of environments and people as well as the complex interactions among cultural, perceptual and environmental variables, identifying EB attributes that link research evidence is paramount in healthcare design.

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Interior Design Faculty Position Announcements: An Analysis of Content

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Abstract

Those academics who have led or participated in interior design faculty searches in the past decade experienced first-hand the challenges in finding, recruiting, and ultimately securing qualified candidates. A pervasive angst manifests itself over conversations at IDEC conferences, in emails and phone calls received from colleagues asking if we know of anyone looking, and through whispers of cancelled searches that will resume the next year or worse of eliminated positions. The topic of the deficit in qualified applicants for interior design faculty positions has been studied and reported on. In 2007 NeoCon hosted a panel discussion on the topic and in response to this panel, a group of seasoned and respected interior design educators and practitioners came together to form the Kimball Office Work Group (KOWG). In 2008 the KOWG issued a comprehensive report titled Sustaining Interior Design Education (Olivieri et al., 2008) which assessed the situation, set strategic goals, made recommendations along with action plans, and led to the creation of resources, such as IDEC's IDEA line and CEUs developed for new faculty by IDEC's Academy. Ten years later, out of curiosity and necessity, the authors turned to take a closer look at the microcosm of interior design faculty ads posted on IDEC as a source for data about current open positions. This paper marks the starting point of a two-phase study that aims to evaluate recent searches for interior design faculty. Phase 1, which reflects the content of this abstract and pending paper presentation, documents an analysis of content of the ads posted on IDEC's job board in fall 2017-spring 2018 for full-time interior design faculty positions with a fall 2018 start. For this study, the authors' process sought to: A) determine how many open positions exist, B) document location of the positions (identified by city, state or province, and IDEC region), C) research

population size of the locales, D) determine types of institutions advertising (public, private, non-profit/for profit), E) establish location of interior design program within the institution, F) ascertain types of positions sought (tenure track, non-tenure track, administrative, and specialty positions), G) document ranks of positions, H) position requirements, I) position preferences, J) job description and responsibilities, and K) application requirements (i.e. portfolio). A snapshot of data culled from the ads revealed the following: A total of 63+ full-time positions were posted, representing 48 individual institutions 16 of which posted more than 1 position. Positions for deans and directors of schools were not included in the count. Of the 63 open positions, 42 were tenure-track, and 21 were non-tenure track with varying titles, including lecturer and instructor. The highest number of open positions by IDEC region were in the South at 33% of the total, followed by the Midwest at 24%, Southwest at 21%, East with 13%, and the least in the Pacific-west at 8%. An American university in the UAE accounted for 1% of the total postings. As a point of comparison, in 2009 the KOWG presented at IDC in Winnipeg, stating over 120 interior design faculty positions were open across North America (KOWG, 2009). The authors acknowledge that the number of open interior design faculty positions starting in fall 2018 could be greater as this study does not include ads posted through other venues. Details of data collection categories outlined in this abstract will be presented and discussed. Phase 2 involves a follow-up study with the programs that posted ads and will assess if positions were filled and, if not, the conditions surrounding the failed search. The intent of this research is to better understand where the discipline of interior design stands at this crossroads regarding cultivating and recruiting talent for the future of interior design education.

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Lighting Conditions and Perceived Learning Experience Among Students in Classroom Buildings: A Post-Occupancy Evaluation Study

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Abstract

Overview Post-occupancy evaluation studies have been recognized for documenting occupants' well-being and responses to indoor environmental quality (IEQ) factors such as thermal, lighting, and acoustic conditions. Lighting is one of the most visible, controllable, and functional IEQ factors of the interior environment and therefore, has been found to be highly predictive of occupant satisfaction and performance. Interior spaces are impacted by the quality and quantity of lighting. Lighting contributes to human circadian rhythm, energy efficiency and building performance. Lighting is sometimes controllable by building occupants and it makes up a significant portion of the design budget. Therefore, the sustainable post-occupancy evaluation survey (SPOES) developed by a Midwest University interdisciplinary team provides an evidence-based quantitative analysis of occupants' satisfaction. It identifies areas that are successful and those that need improvement. The SPOES questionnaire has twelve IEQ categories that impact occupant health, daylighting and electric lighting conditions are two among them. Methodology SPOES is a self-administered, Internet-based, questionnaire. For classroom SPOES, participants rate their level of satisfaction about lighting conditions (i.e., daylighting and electric lighting) on a Likert-type scale from 1 (very dissatisfied) to 7 (very satisfied). They also rate the influence of their physical environment on their perception of their learning experience on a scale from 1 (hinders) to 7 (enhances). In this study, responses (N=1,912) from nine different classroom buildings over eight years were analyzed to investigate students' perception of IEQ (see Table 1). In the

questionnaire, the daylighting and electric lighting IEQ factors have two attributes each about the amount and adjustability of lighting. Findings and Discussion The results show that students were satisfied with the both daylighting and electric lighting conditions and perceived that their learning experience was enhanced by the physical environment (see Table 2). The students were most satisfied with the amount of electric lighting ($M=5.96$), and their satisfaction with electric lighting was higher than their satisfaction with daylighting. Based on the multiple regression analysis (see Table 3), the adjustability of daylighting significantly predicted students' perception of the learning experience ($R^2=0.17$, $F(2,1910)=20.07$, $p=0.001$). However, the amount of daylighting did not significantly predict perceived learning experience at the confidence level of 0.05. Another multiple regression analysis implied that both the amount and adjustability of electric lighting significantly predicted students' perception of learning experience ($R^2=0.22$, $F(2,1910)=29.04$, $p=0.001$). Conclusion These results show that students are satisfied with the lighting conditions in their learning environment and they perceived lighting enhanced their learning experience in the classroom. Students perceived that only the adjustability of daylighting was associated with the learning experience; the amount of daylight did not have any association. However, both amount and adjustability of electric lighting were perceived as being associated with enhancing their learning experience.

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Negotiating environmental challenges: How does older adults adapt to their environment?

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Abstract

Falls and fall-related injuries have become a major concern in older adults (Ambrose et al., 2013). The fall prevention program plays an increasingly important role in minimizing falling risk of older adults. Many researchers have developed fall prevention strategy by identifying and modifying potential environmental hazards in a senior housing. Most studies employed objective assessment tools by knowledgeable observers and they demonstrated reliability and validity of the assessment approach (Clemson, Mackenzie, Ballinger, Close, & Cumming, 2008; Rogers, Rogers, Takeshima, & Islam, 2004). However, environmental hazards could vary across residents' perception, experience, and health status, because the hazards could be determined by the interaction between the person's capacity and environmental pressure in terms of the Person-Environment (P-E) fit. However, the empirical difference in environmental hazards from two assessment approaches is still vastly underexplored. The crux of this research was a portrayal and discussion of older adults' attitudes and behaviors of environmental hazards related to falling risk. The aims of the study were threefold: (1) to identify environmental hazards in the homes of older adults by using objective (home assessment tool by researchers) and subjective assessment (residents' interviews); (2) to compare and contrast differences in environmental hazards from two assessment approaches; and (3) to explain the differences and discuss older adults' adaptive strategies in their home. This research identified environmental hazards in 48 older adults' independent living units at a senior retirement development located in North Florida. Among the five independent living buildings, the oldest independent living building was selected for identifying environmental hazards using two assessment tools. Upon arrival at their home, researcher conducted a home assessment to identify environmental hazards. After that, qualitative data about perceived

environmental hazards was gathered in face-to-face resident interviews, using a semi-structured questionnaire. Residents were asked to describe which environmental hazards they thought increased the risk of falling within each space of his or her unit. This research employed two statistical analyses including a dependent sample t-test and pair-wise kappa statistics in order to identify a significant difference in environmental hazards from two assessment tools as well as examine the inter-rater reliability on each item. Research findings reveal that identifying environmental hazards from residents' perceptions involves collecting different data obtained by using an objective assessment approach. The objective assessment approach identified more environmental hazards. In other words, this finding supports the results that older residents could not identify as many environmental hazards as would be expected by objective assessments. Understanding how older adults adapt to their environment could explain this discrepancy. Older residents would be less likely to identify environmental hazards because of two coping strategies: assimilation (action strategy: modify environmental hazards) or accommodation (mind strategy: change their perception about the environmental hazard). In addition, the subjective assessment approach is also a necessary component in that it could provide new insights about hazards. This research provides persuasive empirical evidence that a comprehensive assessment tool should be necessary for identifying environmental hazards.

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Supporting Environmentally Responsible Behaviors in Green Interiors

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Abstract

A changing climate and global resource degradation have prompted technological innovations that reduce greenhouse gas emissions and are responsive to local ecological conditions. Green buildings that minimize the environmental impacts of the construction process and ongoing maintenance of the built environment, have been praised for their resource efficiency, design innovation, and benefits to building occupants. Increasingly, a growing body of literature has begun to examine the mutually beneficial relationships between sustainable interiors and building occupants. In addition to the well-documented benefits of inhabiting green buildings, the environmentally responsible behaviors (ERBs) of building occupants are worthy of examination. As a counterbalance to the dominant narrative in the green building industry that frames the building occupant as a potential energy liability, this research adopts a hopeful perspective on human behavior. Human behavior, though a significant contributor to global climate change, can also be part of the solution. This research seeks to challenge interior designers to redefine the field of sustainable design to include not only environments that are environmentally responsible, but ones that support the environmentally responsible behaviors of building occupants. Much of the current research examining occupant ERBs in green buildings has focused exclusively on educational buildings, or buildings designed with a pedagogical intent (e.g., schools, museums, libraries) (Cole & Altenburger, 2017; Higgs & McMillan, 2006; Izadpanahi, Elkadi, & Tucker, 2017). Less is known about how occupants learn about sustainability issues and adopt environmental behaviors in buildings that are not designed to teach. This research focuses on the environmental behaviors emerging from the informal relationships between undergraduate students and their on-campus residence halls, asking how buildings support or undermine the ERBs of building occupants in green and non-green buildings over time. The presentation will discuss a theoretical model for understanding how buildings may

support occupant ERBs. The Positive Sustainable Built Environments (PSBE) model is composed of three principle domains: Prime, Permit, and Invite. Collectively, the three components of the PSBE model suggest that a building 1) may prepare occupants to participate in ERBs through the restoration of their mental resources and/or by communicating a sustainable ethos, 2) may allow building occupants to control aspects of their interior environments related to their own energy and resource consumption, and 3) will encourage occupants to engage in ERBs through building features that implement a variety of behavioral intervention strategies. Occupant ERBs were measured over the course of one academic year through an online survey conducted with the first-time residents of six undergraduate residence halls. A visual content analysis of the six residence halls was conducted in order to score several interior spaces within the buildings according to the PSBE model. Linear mixed-effects regression analyses revealed strong support for two of the three domains of the model. The Prime and Invite domains were found to positively support occupant ERBs, regardless of the greenness of the residence hall. Results will be discussed in light of implications for designers seeking to adapt the physical and informational environments of residence halls to better support environmentally responsible behavior.

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Take the Stairs: Exploration of Older Adults' Intention to Use and Attitudes Toward Vertical Mobility Assistive Design Features

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Abstract

As the evidence grows on the health benefits of physical activity, designers have been creating and adopting active design strategies to integrate physical activity to daily routines and to reduce sedentariness (Ahrentzen & Tural, 2015). With the increased recognition of physical environment's impact on health and active living, several green and health-related building standards, such as LEED, WELL, Fitwel, and Enterprise Green Communities, also encourage use of stairs as a way of integrating physical activity to daily lives of occupants. Within this context, of great significance to the field of interior design, especially the residential interior designers, is the use of residential stairs, particularly for older adults who spend the majority of their time at home and tend to have sedentary lifestyles. Although a significant portion of older adults prefer to age in their current homes, most of their residences and the existing stairs lack the necessary design features to support vertical mobility in a safe, viable way. For older adults, using existing stairs in their homes is not only significant as a way for exercising, but also for increased mobility from one floor to the other to be able to independently complete the everyday household chores, such as cooking, doing the laundry, or getting around for other purposes—which is part of “active living” at home (Sallis, et al, 2006). While there is growing evidence on how enhanced stairwell designs and visibility may increase stair use, most of the research to date has focused on public stairs (Eves et al, 2009; Nicoll & Zimring, 2009) and there is a gap in the existing literature on how the stairs of the existing housing stock where older adults currently live and

would like to age in place, can be improved to provide a safe option for increased physical activity and independence, and decreased fear of falls and fall incidents. This study aims to fill this research gap, and address how environmental modifications of stairs through vertical mobility assistive designs can support active living of older adults of varying socio-economic status, education, and health conditions. The main objective is to determine older adults' initial perceptions and attitudes toward currently available interior assistive design features that would support residential stair use. The focus was three vertical accessibility features for active living: half-steps, Stairsteady handrail, and stairlift—three design features that represent varying affordability levels, targeted to adults with differing health and mobility challenges. The data collection instruments were (1) a survey questionnaire of community-living older adults, aged 50+ (n=118), with questions based on the technology acceptance framework (Davis, 1989) to explore intention to use and attitudes toward the vertical accessibility features, and (2) a focus group study (n=14) to provide in-depth data on the factors that influence seniors' perceptions and attitudes. The ordinal regression analyses of the survey data highlight perceived usefulness, and perceived affordability as the most significant factors influencing attitude and intention to use, controlling for education, income level, health and age variables. The focus group findings highlight aesthetic perceptions, and the method of information delivery on the design features as determinants of positive or negative attitudes toward the design products. The study has practical applications for interior design practitioners by providing design guidelines that support active lifestyles, and will provide evidence-based design recommendations for physical wellbeing of older populations.

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The Design Educator as Campus and Industry Leader

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Abstract

Introduction Leadership may be defined as “...getting a group of people to enact of vision of what needs to be accomplished” (Fund, 2006). Leadership encompasses many different aspects. For some, the role of administrator (i.e. program coordinator, department chair, dean, or university president) defines leadership. For others, being acknowledged as a campus or nationally recognized researcher or educator is the way the term is characterized. Whatever the definition, the path to successful leadership encompasses a set of skills that reach far beyond design competence. Disciplinary knowledge is crucial for educators; however, the role of leader requires proficiencies far beyond a degree in interior design. The Council for Interior Design Accreditation (CIDA) serves to ensure that interior design students meet the standards for entry level positions. Design faculty are vetted to make certain that they possess appropriate credentials and knowledge to teach at or above this standard. Moving beyond the role of educator into leadership has traditionally been a difficult transition. A key issue is to understand the difference between leaders and managers. Managers need to be able to plan and organize to accomplish a goal. Effective leaders accomplish goals through effective management and by influencing other people (Fund, 2006). This study investigated the desired skills and capabilities of individuals in leadership. The information was then categorized into a set of competencies. Method A literature review was conducted to evaluate current studies on leadership. Next a focus group of university and business leaders were interviewed to identify desired leadership proficiencies. The professionals represented 2 different universities (including a university president) and business leaders from a representative sample of disciplines including engineering, education, human sciences, business, art and sciences. Results and Discussion Current leadership models were found to be lacking key issues or providing redundant information within the individual models. Therefore, a new set of competencies

was developed. These include 1) Critical thinking, 2) Creativity, 3) Collaboration, 4) Communication, 5) Culture, and 6) Commitment. Each of these competencies was further defined and explained with practical applications. A branding package was then created to illustrate the principles. If this submission is accepted for presentation, each of the six competencies will be explained. Practical ways to develop these attributes will be discussed. Traditionally, many leadership roles have been disproportionately represented from STEM fields. Designers possess unique strengths in creative thinking and an understanding of the design process that can lead to problem solving. This presentation will instruct design educators in identifying and developing their own leadership skills and ways to prepare their students for leadership positions in design professions, academia, and other positions of influence or authority.

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The Influence of Physical Design Features for Engaging Intergenerational Environments

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Abstract

Meaningful engagements between generations are considered an essential aspect of quality life in relation to developmental function for young children (Evans, 2006) and therapeutic function for older adults with dementia (Marquardt, Bueter, & Motzek, 2014). Many empirical studies reported that social abilities of both populations were supported in engaging intergenerational environments with physical design features such as small group size, moderate levels of sound, and non-institutional ambience. Another salient attribute which may substantially influence meaningful intergenerational engagements but has not been given full attention is spatial enclosure. The influence of spatial enclosure on social interaction has been studied extensively in the context of young children and young adults; however little attention has been paid to older adults with dementia. While the results of studies on a single population are not necessarily of lesser relevance or value to other populations, application of the results without credible evidence may adversely result in undesirable outcomes such as lowered satisfaction, maladaptive behaviors, or stress. Furthermore, its effect on interpersonal behavior appears to be currently indeterminant with inconsistent results especially on young children (See Cerruti & Shepley, 2016 and Stamps, 2009 for the literature on this topic). Inadequacy in understanding how people from different ages perceive and react to spatial enclosure may fail to achieve a desirable outcome of meaningful engagements as a developmental and therapeutic potential for promoting health and well-being of young children and older adults with dementia. This study focused on young children and older adults' perspectives of spatial enclosure in relation to social aspects of spatial usage and intergenerational engagements. In particular, the main research questions were: 1) What happens on use of social spaces (i.e., activity, intermediary, and miscellaneous) when physical boundary permits

lesser visual and locomotive permeability during intergenerational activities?; 2) How do young children and older adults with dementia feel about interaction with the different degree of spatial enclosure?; and 3) What physical design features tend to mediate the influence of spatial enclosure on use of social spaces and meaningful engagements with people from different ages?. To answer these questions, this exploratory study used a quasi-experiment to measure the actual spatial usage in relations to the different degrees of spatial enclosure as well as semi-structured interviews, aided by a photographic simulation, to identify ideal physical design features preferred by young children and older adults with dementia during intergenerational activities. Findings showed that the semi-enclosed spatial plan had an influence on the children's spatial usage but not the older adults with dementia who tended to confine themselves to the activity area assigned for seating regardless of the different degrees of spatial enclosure. This study suggests that compared to enclosed spaces, open spaces with moderate degree of visual and locomotive permeability offer desirable outcomes such as autonomy and personal control, stimulation, interaction, security, and accessibility which would enhance the potential for meaningful engagements between young children and older adults with dementia.

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Calibrating color: Lessons from practice on understanding color in context

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Abstract

Entering interior design studies, students are often faced with learning an almost foreign mode of thinking. Design educators are then challenged with guiding these minds to a new way of thinking and seeing the world around them. With strategic coaching, the aim is to guide students to designing holistically and fully flexing the multiple dimensions of design in concert, rather than thinking of these variables in isolation. For example, many students come to the study of color basing decisions solely on personal preferences. Yet, color serves multiple roles in the built environment and this design element remains a priority within professional educational standards established by the Council of Interior Design Accreditation (2018). How can interior design educators present color in greater depth, recognizing human-centered roles and context, even in the very beginning levels? Previous research found that noted designers (n=40) in a national sample applied color for multiple purposes within their design solutions as opposed to using this element primarily for compositional reasons (Portillo & Dohr, 1993). Further validation of this research led to a five-part color planning framework that recognized color criteria applied across a range of interior design contexts (Portillo, 2009); however, this framework did not account for how the prioritization might change from one market sector to another. In the present qualitative study, a cadre of twelve interior designers, with recognized practice expertise and experience, were interviewed in their respective offices to explore color planning strategies employed within one the following market sectors: corporate office, healthcare, hospitality, or residential design (author name withheld for review, 2015). Further, these findings suggest ways to introduce critical color content to beginning students. Two questions explored are: (1) How are different functions of color prioritized across corporate office, healthcare, hospitality, and residential design?; and (2) How have

experienced interior designers evolved in their understanding and ability to utilize color in their designs? The designers interviewed for this study were nominated for their design expertise and use of color. As one means of validating their level of color discrimination abilities, the participating designers were administered the Farnsworth-Munsell 100 Hue Test under controlled conditions. The designers also shared how they prioritized different color functions within a specific market sector as they described a specific project with notable color use. Finally, they shared their professional growth narrative relating to color. Interview narratives also surfaced common stumbling blocks encountered at the beginning stages of practice and subsequent pathways of developing a deeper understanding of color. These senior designers identified not only their own challenges in using color but also spoke to common “rookie mistakes” observed in their interns and entry-level designers. Additionally they offered specific feedback on “critical color concepts” that should be emphasized in interior design education. The insights revealed the need to emphasize context and design applications when teaching theoretical concepts. The content from the stories shared by these professionals’ personal journeys and missteps observed from the entry-level designers they have managed gives us insight for thoughtful ways of scaffolding color into design education. Implications for future research include assessing the effectiveness of instructional interventions in helping students see the multiple purposes that color has to offer them as a tool for achieving their design solutions in different contexts. Future research could also investigate with a larger national study the different color design criteria prioritized across these market sectors.

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Contradictory Discourse in Interior Design Critique

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Abstract

Studio based pedagogy is at the heart of design education including in interior design. Recently, other disciplines like business have also found value in this system and begun to apply it, generating the need for a more nuanced understanding of design process. Design studios emphasize ‘learning by doing’ and critique is a central pedagogical method where students present their work and discuss it with experienced designers. This research investigates the individual critique process commonly applied during the early stages of student design, an activity highly dependent on an instructor’s intuition and experience. Understanding of what makes design critiques effective is not easy and lack enough empirical evidence (see Salama, 2008; Oh, et al., 2012). A variety of issues impact the effectiveness of individual critiques: a lack of student reflection on the feedback received from the instructor, a tendency to follow advice blindly, feeling intimidated by the instructor’s authority and expertise, and feeling disoriented in the learning process (Koch, et al., 2002). Design research has also explored the relationship between the positive and negative comments used in evaluating design solutions and their impact on student learning. Some studies have proposed various “systematic means of examination” for instructors to evaluate their own critique (Oh, et. al, 2012). Our research sheds new light on the critique process by focusing on the discourse between the instructor and students: their decision-making and corresponding project outcomes. In this study “decision making” refers to the process of choosing some of the students’ design ideas during the individual critique. During this process, student and instructor evaluate the student’s multiple design solutions. The student then chooses some solutions for further

refinement and eliminates others. We are particularly interested in the role and influence of the instructor in this setting, and implications for pedagogy. The data used in this study includes: video records and transcriptions of a series of critique sessions among an instructor and undergraduate design juniors in a mid-western university; it was chosen from a larger data set provided by the DTRS'10 organizers (Adams & Siddiqui, 2015). During these sessions, students individually review their work with the instructor. The design problem required students to design an office ottoman that can be used for casual short meetings. After the review, students present their top three design solutions to the client. After that, the students meet with their instructor again to prepare for the final presentation where only one solution is proposed by each student. Using a mixed method to analyze the data, first we systematically explicated four categories of codes based on instructor's comments. The coding scheme is based on prior models of affective judgements (Dong, et al., 2008). One code records positive comments: praising and complementing an idea, pointing out the strengths, and social and interpersonal instances such as laughter during discussion about an idea. Another code records negative comments: sarcastic comments about an idea, pointing out the weaknesses of an idea, and criticizing and raising concerns about an idea. A third code addresses directive comments suggesting part of the design solution: suggesting colors and material for the proposed design. The fourth code addresses neutral comments that facilitate student progress. The results suggest potential relationship between instructor's positive feedback on ideas and choosing ideas for further refinements. Additionally, we found no relationship between the times spent discussing an idea and choosing a potential idea for more exploration. More data can help us test our further assumptions. Also, future research can assess our assumptions throughout different stages of design and different formats of critique.

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Empathy Quotient: Quantifying the Foundation of Design Thinking

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Abstract

Theoretical Context and Problem Human-centered design has been a growing priority in many design disciplines, including interior design. Design thinking, particularly the first step of empathizing with the user or client, provides a methodology to produce design that is increasingly human-centered. The success of design thinking relies upon the first step laying the foundation for each of the following steps, but the designer involved requires the traits needed to build empathy with the user/client in order for this foundation to be properly established. The challenge for educators and firm leaders lies in knowing when a student or practitioner possesses the empathy trait that is needed to successfully initiate the design thinking process. Stemming from this problem, the following questions are posed: What instrument can successfully measure empathy? If empathy can be successfully measured, what level of empathy trait characteristics do interior design students possess? Methodology Following human subjects approval, undergraduate interior design students in the second through fourth years of study at a competitive entry interior design program in the U.S. voluntarily participated in the research effort prior to engaging in a department-wide design charrette. Two self-report instruments were administered to the participants: an emotional intelligence test known as the Assessing Emotions Scale (AES) (Schutte, et al. 1998), and an empathy test, the Empathy Quotient (EQ) (Baron-Cohen & Wheelwright, 2004). The AES was selected for its reliability (Austin, E. J. et al., 2004) and wide-spread use in other studies. The EQ was selected because it specifically targets empathy while other instruments do not, and it has been shown to be statistically reliable (Lawrence, et al., 2004; Wakabayashi, et al., 2006). Data results were analyzed to uncover any possible patterns between the data sets, and to describe the empathy characteristics of the participants. Findings and Discussion By searching for any potential patterns in the participants' scores findings indicate the AES and the EQ

measure different characteristics. When empathy is the desired measurable outcome, the EQ should be used, but the AES is still a reliable measure of emotional intelligence. In other words, emotional intelligence and empathy are not exactly the same thing. The study participants ($n=106$) possess a mean EQ of 48.00 (range=14-75; $SD=11.76$) out of a possible 80 points. Females ($n=98$; $m=48.59$; range= 14-75; $SD=11.58$) possess a higher EQ than males ($n=8$; $m=40.75$; range= 21-56; $SD=12.30$) but the difference only approaches statistical significance ($t(104)=1.83$; $p=.07$). While this study has fewer participants and would benefit from expanding the participation, this observation between females and males differs with other studies using the EQ where females consistently demonstrate a statistically significant higher EQ over males (Baron-Cohen & Wheelwright, 2004; Lawrence, et al., 2004; Wakabayashi, et al., 2006). This presentation will provide additional discussion on the EQ data from this study, brackets of scores and their meaning (0-32 = lower than avg.; 33-52 = avg.; 53-61 = above avg.; 62-80 = very high above avg., or “super-empathic”), and the rich potential for future research involving EQ in connection with design thinking and human-centered design. Interior design education is on the cusp of being able to quantify the foundational stage of design thinking.

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Technology as a Tool: Assessing Interior Design Student Perceptions

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Abstract

Studio courses in undergraduate architecture and interior design degrees are where students gain experience of aspects of a working design firm. Typically, students work on multiple projects with continued feedback about their work and design processes from faculty and peers in both a semi-structured face-to-face format and through an online Learning Management System (LMS). There have been shifts in the role of technology within design studio courses as society becomes further dominated by new forms of technology. More students attend classes with a laptop or other portable tablet device to take notes or record lectures and discussions. Students utilize smart phones to photograph faculty notes on marker boards or to communicate with peers and mentors through phone applications and emails. The use of communication technology is assisting in more fruitful collaborations and exchanges across distances and encouraging students to interact with others outside of their studio environment. Stoerger and Krieger (2016) propose what is termed the Transformative Learning Theory to include increased faculty engagement with students promoting more collaboration and reflection within assignments or discussions. It is now critical that design educators understand students' perceptions of technology in the studio environment in order to inform any future pedagogical adjustments. To assess these perceptions, an instrumental case study that included individual interviews and group discussions was conducted of selected students enrolled in upper-level interior design studios. The results of these interviews and discussions were enlightening. Many of the students highlighted their preference for face-to-face interaction and collaboration rather than relying solely on technological methods. Each of the students discussed the difficulty of completing project tasks in a studio course if their peers only communicated through text messaging and emails rather than balancing these communications with direct interaction outside of the scheduled class time. Those interviewed expressed a belief that their

success in the studio course was partly due to the ability to work directly with their faculty and also emphasized their awareness that the ability to interact with clients and co-workers will be a necessity in their future workplace. During faculty observations and discussions, it was noted that student interactions and movement through the studio space were guided by their access to and understanding of available technology. Throughout the interviews and discussions, the ability to use the internet for inspiration, precedents and technical research along with the potential to photograph project work and site information was valued. There are a variety of conclusions that can be derived from this study. First, it is essential for face-to-face interaction to occur periodically over the length of the studio project for students to make progress on their project goals. It is critical that studio courses retain smaller class sizes allowing for the faculty to have more hands-on, face-to-face interaction with the students in the course. Studio communication may potentially be bolstered through access to social media platforms allowing students to post visuals and receive feedback while not in the classroom, encouraging discussion and collaboration. However, this does not act as a replacement for the in-person interactions requested by students. Students gain valuable insight from both their faculty member as well as their peers and are able to ascertain information from body language and facial expressions that would otherwise be difficult to communicate (Matthews & Weigand, 2001). Lastly, while technology has provided for more opportunities for collaborative learning and faster communication, it has not yet replaced the need for direct interaction when learning the methods of creative visualization in interior design education.

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The critical nature of design education.

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Abstract

Higher education practices in interior design not only impact the ability to solve complex design problems, they also impact the ability to think critically when engaged in everyday problem solving. This reflects the researcher's belief in the importance of critical thinking for graduates and the positive impact it can have on society as a whole. The American Association of Colleges and Universities (AACU) found that 75% of employers want colleges to place more emphasis on critical thinking and real world problem solving, and 93% of these employers felt that these skills were more important than major (AACU,2013). Further, CIDA has identified creative and critical thinking skills as paramount for students and professionals embedded within the discipline (CIDA,2014). This study will therefore focus on the question "How does interior design education impact the transfer of critical thinking skills to everyday problem solving?". To make certain that the improvement in student learning was deliberate and transformative, the university implemented targeted Discipline-Focused Projects to transform critical thinking skills. These projects support academic disciplines working to infuse critical thinking into upper-division curriculum. In order to provide a comprehensive measure of everyday critical thinking skills, a number of standardized assessments were researched such as the California Critical Thinking Skills Test; the Cornell Critical Thinking Test; and the Critical Thinking Assessment Test (CAT). The CAT was developed by Tennessee Tech and designed with help from faculty and support from the National Science Foundation to engage students in responding to 15 short answer questions that involve real world problem solving skills. It has been tested for reliability and validity and is scored by university faculty. The Department of Interior Architecture and Design participated in the original round of four Discipline-Focused Projects from 2015-2017, and is currently repeating the study for 2017-2019. The initial CAT pre-test was administered to rising juniors (n=34) in the spring of 2015 and post-test

measures were taken during the graduating spring of 2017 with a control group of seniors (n=32) in 2016. Test results yield overall critical thinking, convergent, divergent, and 15 individual question scores for the undergraduate sample. The data and results for this presentation are organized into the two categories of convergent and divergent thinking skills within the problem-solving process. Convergent skills are critical thinking skills that arrive at one best solution, while divergent skills are characterized as those skills that arrive at many possible solutions. While many of the CAT questions within both the convergent and divergent skill sets scored within the range of the national norm, there were two distinct areas of opportunity specific to design student education that surfaced across pre, post, and control groups. The largest area for improvement was seen within the divergent mean score for graduating seniors (8.28) in that it was lower than the national average (9.36). Specifically, the mean differences of “identifying additional information needed to evaluate a hypothesis” ($p<.05, r=-.48$) and “providing alternative explanations for results that have many possible causes” ($p<.05, r=-.81$) were significantly different from the national norm. The areas of strength were within the convergent scores where graduating seniors (11.17) were higher than the national average (9.69). This was especially true with the questions “explaining a best solution” ($p<.05, r=+.49$) and “explaining how changes to a situation can impact the solution” ($p<.05, r=+.31$). Knowing where opportunities lie within interior design curriculum can strengthen educator approaches to foster critical thinking within the classroom. Discussions will center on why these differences exist and strategies for impacting critical thinking in interior design education.

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The Role of the Built Environment in Enhancing Student Resilience

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Abstract

Intro College students today have higher reported stress and anxiety than previous generations with many schools reporting 100-300% increases in visits to campus counseling centers (Beiter, et al, 2014). Although stress is a part of life, this increase is generating concern for college administrators. How can they provide environments in which students can be challenged and successful while remaining healthy in mind and body? Obviously, services such as university counseling and wellness centers play a key role. But what about the design of the campus and its impact on the student experience and well-being? This abstract will present a case study of one university's attempt to address the issue of student well-being from many angles, including that of the built environment. Background College can be an exciting time of life, but it can also be a stress-filled time. Beiter, et al. (2014) found that the ten most common stressors for college students were academic performance, pressure to succeed, post-graduation plans, financial concerns, quality of sleep, relationships with friends, relationship with family, overall health, body image, and self-esteem. Students who have managed the pressures of high school well may still face challenges in college. For students who have experienced trauma or adverse childhood experiences, referred to as "ACES", the challenges can be even greater (Reuben, et al., 2016). There are many ways a university can develop a nurturing college environment. Wellness programs, counseling centers, victim advocacy, special interest groups, and many other opportunities to support students are all important. However, there is a role for design in helping to create opportunities to develop relationships with fellow students by providing the opportunity to connect with others on campus. Designers know that proximity offers opportunity for friendship formation can make a positive difference in the lives of students (Waxman, Clemons, Banning, & McKelfresh, 2007). Overall health can

also be impacted with thoughtful design that considers the mental and physical well-being of students. Access to high quality spaces with good air quality, natural light, ability to access healthy food and fitness opportunities, and distraction-free and comfortable work environments that optimize cognitive and emotional health are essential and in the scope of experience of interior designers (WELL Building Standards, 2018). Case Study A large research university in the southeastern United States was the site for this case study. The university was concerned with the increasing mental health needs of students. In addition to increasing staffing at the counseling center, the university approached the issues from several angles. A group of faculty were assembled by the university's College of Social Work to create a student resilience program. Designed in a student-friendly online format, the program provides advice in the form of videos from students and faculty on how to navigate the college experience. An interior design faculty member was asked to get involved by offering guidance on how to use spaces to enhance student well-being. These topics included setting up the living space, the value of personalizing spaces, the importance of spaces for private time as well as those spaces that enhance friendship formation, the importance of access to nature and daylight, spaces for relaxation and restoration both on and off campus, and how to use campus spaces to enhance physical health. At the time of this writing, over 3000 entering freshman (from a class of 6400) have participated in some part of the university resilience program. Conclusion Mental health and student well-being are complex issues and solutions must be approached from many angles. Although not a complete solution, interior design has a role to play in the health and well-being of students through attention to design.

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Toward a framework for human-centered design education: Enhancing empathy through experiential learning

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Abstract

Theoretical Context and Problem Human-centered design demands the designer to fully engage with the user/client, empathizing with the user needs that the design solution will seek to solve. Typically, the built environment has been designed to accommodate the average user, but new demands call for a more tailored user-centered approach that addresses the negative consequences of simply meeting average needs. The discovery process of a more tailored approach requires the designer to collect information from the client and users, design typology precedent, and location factors among other diverse sources. Innovation, or creativity, occurs when the designer masterfully combines these needs and contextual factors into a cohesive, functional, and beautiful design. For educators, the problem of integrating direct client interaction is a challenge, but is incredibly important in the design education process. Direct interactions with users lead designers to develop empathetic design solutions (Hess & Fila, 2015). Additionally, the integration of a service component along with thoughtful reflection can be a catalyst for developing sensitivity toward the end user and can create an expanded cultural awareness among students (Bowie & Cassim, 2016), both of which represent desirable characteristics of a robust design curriculum as required for accreditation. Experiential learning combines direct interaction with experimentation and reflection exercises. The proposed framework posits experiential learning as a vehicle for encouraging empathy among students in the production of human-centered design solutions. Framework Underpinnings (Methodology) Based on models of experiential learning theory (ELT) and the Empathy Quotient (EQ) (Baron-Cohen & Wheelwright, 2004), this study proposes a framework and process for preparing students to exercise empathic design in a learning environment. Empathetic

design is an interpretive approach to solving complex design problems by focusing on everyday life experiences and human emotion (Mattelmäki, Vaajakallio, & Koskinen 2014). ELT is predicated on the belief that knowledge can be created through a transformative and participatory experience which includes active experimentation as well as reflective observation (Kolb, 1984). While it is common for design students to participate in observation or other passive techniques for information gathering, these activities are neither transformative nor empathy-generating.

Discussion and Proposed Framework

In order to assess the effectiveness of experiential learning in generating empathy, this framework proposes an EQ pretest prior to students beginning a design project. Next, students would be engaged in a learning process founded on ELT that brings students and accurate stakeholders together in a hands-on interactive process. Options for participatory activities will be presented and include a design charrette, observation coupled with interview and service learning, and a trip to work/serve at an organization relevant to the design topic. The next step in the framework is to execute the design process with project milestones typical for a design studio project that includes intermediate process and final presentations to the stakeholder group. Finally, the framework proposes that an EQ retest be administered and results compared with the pretest to gauge any possible change. Project scenarios will be presented that adhere to this framework, and the framework itself will be presented and discussed as an effective vehicle for accomplishing the goal of enhancing empathy through experiential learning with the ultimate goal of producing human-centered design solutions in any level studio.

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Transforming fears into creative action: Internal and external barriers to creativity of first-year university students

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Abstract

Creative abilities, which underlie all aspects of design process, are highly encouraged by an individual's motivation and personal beliefs about their own creativity (Davis, 1999; Randel & Jaussi, 2003). Understanding what makes students hinder their creative efforts is therefore a necessary precursor to facilitating their creative outcomes. Then, how does the interior design education transform students' risks into creative behavior? While exploring the shifted perception of first-year university students after taking a semester-long creativity course, the current study revealed the changes of creative minds in relation to both internal and external barriers to being creative. Participants in this study were a total of 252 first-year university students who took the creativity course during their first semester in 2016 and 2017. The interdisciplinary creativity course involved in the three educational components: the fundamentals of creativity theory and research, creative case examples drawn from multiple disciplines, and experiential learning to apply creative thinking. The completed pre-and-post survey during designated class time in the 2nd and 15th weeks of each Spring semester was administered using "Qualtrics Survey Software" on individual laptops. This study examined the perception changes of creative personal identity, the extent of strongly perceived creativity in the self, with three items on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The following eight items were given to the students to select multiple challenges to being creative: four internal challenges to being creative (fear of being judged, self-doubt, lack of opportunity, and tools too difficult) and four external barriers (not enough time, inadequate funding, competing personal obligations, and tools not accessible). After these questions, students were also asked to describe what they had learned about creativity from the course

using an open-ended question at the end of the semester. The study primarily explored the different levels of creative personal identity, using a paired-samples t-test. The statistically significant result indicated a higher mean score of creative personal identity after taking the creativity course: $t(251) = 4.46$; $p < .001$ (pre-test: $M = 3.71$, $SD = 0.74$; post-test: $M = 3.89$, $SD = 0.71$). For the biggest challenges to being creative, “time,” “money,” “tools not accessible,” and “self-doubt” were most frequently reported both in the pre- and post-tests. A set of McNemar tests showed the statistically significant changes from the pre- to the post-test of those frequencies in four challenges: “self-doubt,” “fear of being judged,” “lack of opportunity,” and “competing personal obligations.” These changes imply that the students tended to be less likely to perceive internal barriers, while they tended to be more likely to reflect their external barriers at the end of the semester (Appendix). This study found a positive influence of the creativity course on strengthening creative mind with stronger creative personal identity and raised awareness of the personal challenges to being creative. The course activities overall played a powerful motivating role not only in reducing students’ internal struggles to try more creative ways out of their comfort zone but also in turning their limited resources to help creativity. In addition, students can be more likely to practice implementing their own creativity regardless of risks or errors, when educators create a climate of opportunity for students’ engagement in creative potential as the previous studies recommended (Ellies & Meneely, 2015; Grohman & Szmidt, 2013; Portillo, 1996). Several limitations should be considered: the sample could be expanded to include multiple programs in different institutions, and the measurement could include actual performance of students in creative thinking to compare and contrast with the perception changes of creative minds.

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Assessment Tool for Users' Experience in Healthcare Settings

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Abstract

Issue: In creating notable experiences for patients in healthcare settings, design components are critical in offering psychological support surrounding patients' expectations with respect to the level of clinical care (Dilani, 2008; Knudson, 2017). A growing body of research maintains that healthcare design strategies influence patients' health outcomes and wellness (Devlin & Arneill, 2003; Laursen, et al, 2014). While evidence-based design has been studied through post-occupancy evaluation of overall facility design of clinics and other spaces such as inpatient rooms (Quan et al, 2017), little research has focused on evaluating users' physical and emotional well-being, and social interaction that inform wellness-design features. Therefore, the purpose of this study is three-fold: 1) to generate wellness-design criteria to assess the design of existing facilities based on users' experience; 2) to develop design guidelines (checklist) to assist in design decision-making; 3) to propose a method and protocol for user-centered wellness design evaluation tool for future studies. Process and Method: Qualitative and quantitative research methods were used to create a valid set of wellness design criteria. First, content analysis was conducted identifying wellness-design goals and critical components of existing design evaluation standards and guidelines (Table 1). Secondly, an online survey and statistical analysis were used for examining how users might perceive 20 wellness-design components based on their experience when visiting facilities. A total of 299 human subjects who had visited a healthcare facility at least one time in the United States during the past 12 months participated in the national survey in April, 2017. Data were analyzed to determine how wellness-design goals are met, and what critical design components are important, and how they effected experience of the physical, emotional, and social

well-being of participants. Results: An excel-based interactive wellness-design evaluation tool (Figure 1) was created based on research results. From content analysis, descriptive narratives and graphic visuals provided a detailed understanding of critical design components that are evidence-based. A set of graphic diagram and illustrations of the 20 wellness design components were cross-referenced (Figure 2). The mean values of each design component, and their impact on participant's physical, emotional, and social well-being from the survey results (Figure 3) were incorporated to develop wellness-design criteria for setting evaluation standards to be used in evidence-based design projects. Each design component was addressed in terms of the three wellness aspects of the healthcare facility during their visit. Itemized scores for each design component and the final score of the total itemized scores from individuals' evaluation results were compared to the mean values of the survey results. Importance of the Topic: This study introduces evidence-based design criteria, method, and tool to support the concept of users' health and well-being and ultimately wellness experience of patients and family during visits to healthcare facilities. As an evidence-based model of practice, the tool could facilitate communication among the collaborative team of healthcare designers and stakeholders involved. Although survey participants had limited exposure to overall facility, the study provides new insights to suggest research possibilities and applications of the tool with respect to how the general population might perceive the wellness-design components in healthcare environments, and what design solutions support users' experience of care.

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Case Study Exploring the Effectiveness of Unassigned Workspace at Workplace

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Abstract

Overview: Workplace environments are ever changing and typically contingent upon various changes that take place in society including economics, demographic shifts, and technology (Maitland & Thompson, 2011). One trend that has emerged recently is unassigned workspace, where the individual employee has no dedicated personally assigned office, workstation, or desk. The goal here is to undertake the work in a wide variety of work setting inside the office like project rooms, huddle rooms, café, living room etc. This strategy also helps employees widen their circle of contacts reinforcing the minimal status distinctions and disciplinary boundaries, easing the natural flow of information in the office (Franklin & Steele, 1994). How does unassigned workspace contribute to overall organizational and workplace effectiveness? Effective workplaces are typically associated with better employee outcomes like their engagement, satisfaction, and turnover intention (Gallinsky, 2014). An initial literature review indicated there was not very significant research found in the area of unassigned workspaces and its relation to employees' satisfaction, engagement and retention. Purpose: The purpose of this study is to better understand how unassigned office space translates into an effective workspace. Family and Work Institute (<http://www.familiesandwork.org/>) categorizes six components for an effective workplace. The six categories are: opportunities for learning, supervisor support for work success, autonomy, culture of trust, work-life fit and satisfaction with earnings, benefits and opportunities for advancement (Families and Work Institute, 2012). For the purpose of this study, only three categories: opportunities of learning, autonomy and culture of trust are taken into consideration. This study focuses on employees and their understanding of how unassigned workspaces impacts their engagement, satisfaction and desire to stay with the firm based on this model. Method: Two workplaces recently designed on the strategy of unassigned workspaces are analyzed as case studies to understand

this phenomenon. Mixed methodology i.e. primarily qualitative method with a survey nested into it is used for this study. Grounded theory, one of the strategies of qualitative research methodology is applied as a method for analyzing the data. Five participants from each workplace were interviewed to understand the effectiveness of the workplace. To capture most of the target audience in both case studies, a survey was sent to understand the effectiveness of this model. The study aimed to reveal the participants' perspectives and interpretations of their own actions and their physical environment on effectiveness in relation to the unassigned work environment. The information helped in development of an overarching theoretical scheme for integrating spatial categories and describing the employees' experiences of their work environment from the various perspectives. Outcomes and Implications: In this study there is evidence that the unassigned workspace enhances interaction, collaboration and social activity and challenges the hierarchical structure of the workplace. The research also reveals that it is not just the operation and policies but the spatial attributes that have successfully delivered these elements of effectiveness hence provide satisfaction, engagement and retention. However, some of the goals of culture of trust and autonomy like privacy, personalization and lack of control are compromised in these environments. The insights obtained from this study will provide designers, architects, and facility managers with a new design tool to aid in making the unassigned workspaces model more effective.

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Design Technology: Aligning Student Learning with the Expectations of the Profession

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Abstract

Reports by ASID (2018), CIDA (2018), and IIDA (2018) all underscore the importance of technology in not only advancing our industry but in disrupting long-entrenched paradigms within it. New communication platforms now allow designers to leverage tactics with newfound fidelity, interoperability, and greater production speed. Yet, it is unclear how these advancements influence the expectations for entry-level designers—and by extension—the pedagogies of design educators readying their students. This study applied a systems thinking approach (Betts, 1992) to explore the state of technology in the design process by ascertaining tactics used during multiple phases of the design process, i.e., design development (DD), construction documents (CDs), and construction administration (CA). Practitioners were asked to share their knowledge expectations for entry-level designers relative to specific software applications. To identify trends, responses were compared to previous work by Dyar and Huber (2015). Methods An online survey consisting of numerical scales, multiple choice questions, and open-ended items was sent to a purposive expert sample of 975 designers from 144 firms, and 157 recent interior design alumni from a southeastern research university; 134 of which completed the survey (see Table 1). Findings To probe the strategies of DD, respondents were asked which applications were used in the production of renderings and client presentations. For rendering, 17 programs/tactics were mentioned with Revit Cloud Rendering (39%) and SketchUp (36%) most cited, though hand sketching was also prevalent at 22% (Table 2). To generate client presentations, 13 programs/tactics were mentioned with the most predominant being the graphic design programs Photoshop (66%) and InDesign (62%), which was also the case in the 2015 survey (Table 3). Fourteen percent mentioned advanced technologies

including animated walkthroughs, virtual reality (VR), and augmented reality (AR) for presentations. Respondents cited 13 programs used to generate CDs, with Revit (65%) and AutoCAD (45%) named most frequently (Table 4). In the 2015 survey, both programs were equally cited at 58% (Dyar & Huber) which indicates a growth in Revit use and a decrease in AutoCAD use during the past three years. Data also suggests the programs utilized in the CD phase may influence communication tactics with clients. For instance, of those using Revit for CDs, 55% indicated they used Revit Cloud Rendering, while 48% of those using AutoCAD for CDs employed SketchUp (Table 5). Additionally, those using Revit for CDs cited less hand sketching (25%) than those using AutoCAD (30%). During CA, respondents often used viewer/markup programs such as Bluebeam (54%) and Acrobat (19%) as well as the spreadsheet program, Excel (34%) (Table 6). As indicated in Table 7, respondents suggested entry-level designers should have advanced working knowledge of Revit, PhotoShop, InDesign, AutoCAD, and Sketchup ($M \geq 70$). Practitioners responded that graduating students should have at least a basic knowledge of hand drawing and rendering, as well as knowledge of Adobe Illustrator. These findings are similar to the 2015 survey (Dyar & Huber). Among the 2018 findings, the only statistically significant difference was found between firm size and desired software knowledge, with post hoc testing revealing a greater desire for Revit in large firms (one-way ANOVA ($F(2,107)=p=.002$). Conclusion Collectively, 51 programs and tactics were mentioned in survey responses. While these findings do not indicate drastic shifts in technological preferences, there are noticeable increases in the use of Revit and Bluebeam. At the same time, findings suggest decreases in the use of AutoCAD and Adobe Acrobat. While many of the same applications are being used, new tactics have emerged making the range of expected technology knowledge for emerging designers increasingly broad.

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Design, Inspire, Promote: Creative Careers and Portfolio-Building on Social Media

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Abstract

Social media platforms such as Pinterest have been studied from the perspective of design collaboration and identity development (Scolere, 2018). Less explored is the increasing reliance on social media platforms by designers for portfolio-building and portfolio distribution across what Zhao et al., (2015) refer to as a vast social media ecology. Moreover, in the face of the growing wave of industry professionals' proclamations to designers that "You don't need a portfolio anymore. You have an Instagram feed" (Greenfield, 2014, April 11), this case study seeks to understand the evolving nature of the design portfolio in the context of popular social media platforms such as Instagram and Pinterest as well as design-centric platforms such as Behance and Dribbble. As interior designers continue to adopt social media technologies to promote their work and build their creative careers, this case study focuses on professional graphic designers whose leading practices illuminate emerging practices of portfolio-building across design disciplines. Method To investigate how designers are adopting social media a key part of portfolio-building and distribution, this project draws on two sources including: 1) in-depth interviews with professional designers and 2) participant observation of social media platforms for design. In-depth qualitative interviews were conducted with 50 professional graphic designers who were recruited through professional online networks as well as through the leading professionally-oriented global portfolio platform, Findings Overall, this study identifies the social media logic (van Dijck & Poell, 2013) of the design portfolio as multi-platformed, connected and temporally dynamic, suggesting an emerging structure for the creative portfolio including new metrics for evaluation, evaluators as followers, value commitments, and forms of presenting work that are in shaped in part by the platforms for which they are produced. Multi-Platformed and Distributed: This highlights the unique and varied

design affordances of social media platforms. For instance, the format, display, and size parameters of content varied considerably on each platform, which meant that designers were constantly thinking about considerations of display on each platform as they developed their work. In addition to image parameters, the affordance of comparability built into creative platforms such as Behance and Dribbble, structures designers' works around activity feeds and featured galleries which are organized in infinite scrolling style where thumbnail images of projects (Behance) or "shots" (Dribbble) are aggregated and appear side-by-side in a grid. Connected and Continual: While updates to a web portfolio aren't immediately visible to a perceived live audience, an update of project work on Behance means immediate notifications to followers. For design professionals who view these platforms as part of their presentation of portfolio, each post is experienced as a form of portfolio evaluation through social media metrics of likes and followers. Temporally Dynamic: Instead of the more traditional portfolio work of documenting and displaying completed projects or process work, the 'feed' nature of the social media portfolio was experienced by designers as a constant demand for new design content. Implications As the portfolio becomes digital and distributed across a sprawling social media ecology, the work involved in the production and distribution of a portfolio for designers becomes never-ending. Moreover, tensions emerge around the evolving parameters for design content, the continually changing technologies and features of portfolio platforms, and the metric culture of creative work circulating among social media platforms. As such, this research has implications for teaching portfolio and professional communication in interior design education as well as developing literacies around social media as portfolio.

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Perceptions from the Field: The Value of Soft and Hard Skills in Interior Design Practice

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Abstract

Introduction Position announcements for entry-level interior designers often contain long and wide-ranging lists of desirable traits including technical knowledge, software proficiency, and a variety of soft skills such as attitude, work ethic, and the ability to collaborate (Dyar & Huber, 2015; Gale, Duffey, Park-Gates, & Peek, 2017; Huber & Pable, 2018). Research suggests that those making hiring decisions may prioritize soft skills (Huber, 2018). Tarver and Waxman's (2014) work revealed that the soft skills of critical thinking and effective communication were essential, along with the ability to analyze and assess a situation, and to work well in groups. This study explores skills and traits highly valued in design practice and compares the perceptions of entry-level designers to those in design management positions with the goal of unearthing commonalities and incongruities. Method A purposive sample of interior designers was created by screening LinkedInTM to locate designers working across the U.S. An online survey comprised of numerical scales, multiple-choice questions, and free responses was sent to 975 designers from 144 firms, and 157 alumni from a research university. These lists generated 134 completed surveys (9% & 32% response rates). Respondents with less than five years of experience formed the entry-level cohort (ELc) while those with positions indicating firm leadership formed the management cohort (Mc) (Table 1). The survey explored practitioners' ratings of soft skills (SS), hard skills (HS), as well as various experiences (EX). Findings A one-way ANOVA indicated a statistical difference between entry-level designer's ratings of soft skills, hard skills, and experience. A Tukey test revealed the soft skills mean was significantly higher than hard skills and experience. Tests also showed hard skills significantly higher than experience. Both management and entry-level designers listed the

same five soft skills as important with willingness to learn, work ethic, positive attitude, interpersonal and collaboration skills, and creativity and curiosity most valued (Table 2). When it came to hard skills, the entry-level and management cohorts showed statistically significantly different scores in over half of the hard skills presented. Management rated knowledge base, design process, expertise in building information modeling (BIM), production of construction documents, and hand sketching/rendering higher than the entry-level cohort. High scores by management in hand sketching/rendering may be due to their firsthand work with clients and the timing of their education which may have preceded some digital applications. The importance of BIM may be indicative of a need in the marketplace for this skillset. Entry-level designers (ELc) rated the soft skills of confidence, authenticity, and trustworthiness, and the hard skills of computer-aided design (CAD) and FF&E selection statistically significantly higher than the management (Mc) cohort. The high rating of confidence is supported by the work of Huber (2018) whose findings suggested that some design managers perceive entry-level designers to be overly confident. Managers also prized the ability to strategize and the presence of analytical thinking. Designers indicated skills needing more attention in school included more software knowledge (especially Revit, PhotoShop, and Sketchup), more knowledge of construction practices, production of construction documents, construction administration, stronger business acumen, and more knowledge of FF&E and specifications. Responses also suggest that communication is held in esteem and the experiences afforded by service learning pedagogies are valued (Table 4). Conclusion Collectively, these findings suggest that while hard skills may be viewed differently by entry-level designers and design managers, the value of soft skills is both high and relatively constant.

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The Makerspace Library Connection: Designing an Elementary School Library That Rises to Meet the Needs of the Future

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Abstract

The superintendent at an elementary school approached the interior design department for design recommendations for the renovation of their school library. The school was built in the 1970s, and the 1,600 sq. ft. library was in its original condition. The library was located in the center of a square building, and was without natural daylight. Book stacks lined the perimeter of the room, with a few heavy tables and chairs randomly placed in the center of the space. The users of the space were students in 2nd through 6th grade, who use the library for group story time, individual reading, one-on-one lessons with faculty, and to browse and check out books. The current furniture was out dated and the layout of the space allowed for very little choice in play, position and posture for the students. Two interior design students with the guidance of an instructor developed a program based on current research on the fast-changing student learning commons and interviews with the superintendent and school librarian (Sens, 2009). The stakeholders asked for student input on what they would like to see in a newly renovated library, and shared that valuable information with the design team. A discussion on the future maker space to the west of the library led the direction of the research. A Makerspace is a destination for thinking, learning, doing, creating, producing, and sharing. It is a space that takes advantage of multiple learning styles, through investigation and a hybrid of the arts and sciences (Loertscher, Preddy, and Derry, 2013). The interior design students were captivated by the quest to create a 'laboratory' for new ways of teaching and learning, as quoted by Freeman (2005). After completing the predesign phase, student interior designers developed a concept for the library design that defined the visual elements and spatial qualities in the redesign. The goal of the redesign was to provide an engaging space that invited students to learn through discovery. Through adaptable seating,

captivating wall art, and writable surfaces, the space was designed to serve as a strong foundation for students to explore the books that line the perimeter. A bright color palette was established to tie the space together as an active learning environment for students to enhance their learning experience and explore the world around them. The school educators desired to incorporate a loft to take advantage of the height of the space. The loft was custom designed to create two reading areas to offer the students a wider range of choice in where they read. The circulation desk was moved to the center of the space to allow the librarian to view all areas of the library and into the future maker space. The furniture selections were light weight, reconfigurable, and allowed for multiple ways of use. The walls were lined with wall treatments resembling crossword puzzles, activity boards were constructed, and quotes were used to foster a sense of wonder and imagination. The final design of the library allows for active learning, speaks the language of the student users, and makes reading materials attractive. The future maker space will further promote search and discovery, creating 'learning laboratories' that promote curiosity in students.

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Accessing Residents' Satisfaction with Housing Condition and Community Environments in Distressed Urban Neighborhoods

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Abstract

Many cities in North America have undergone urban revitalization in the 1990's, often the focus on central business districts while neighborhoods had to bore the burden of change with little in return (Stone et al., 2015). For the city of Chattanooga, initial redevelopment planning was inclusive though the outcomes seem to show a discrepancy in the distribution of renewal benefits among different neighborhoods. While there have been multiple reports on the city's economic growth, there has been little attention given to how residents in city neighborhoods perceive their housing and community environments. Because housing and community environments are experienced not only physically, but also socially and psychologically, residents' perception of their environment influences their quality of life. Safety can have a more significant impact on neighborhood satisfaction and well-being than the physical conditions of housing units (Wright & Kloos, 2007). Residents' satisfaction with their neighborhoods is also positively associated with a strong sense of community (Hur & Morrow-Jones, 2008). The goals of this study are to examine Chattanooga residents' satisfactions with their housing community environments and investigate the factors that have potentially contributed to residents' perceptions. Six neighborhoods were selected based on property value rates and home ownership rate changes from which residents were randomly selected to participate in the survey. Data was collected through both online and paper surveys in spring of 2018. To measure residents' satisfaction, a self-reported questionnaire was developed. The survey collected data on the degree of satisfaction of housing unit and community environments by examining perceptions on spaciousness, heating and cooling (HVAC), insulation, overall comfort level, monthly energy cost, monthly housing cost, affordability of the cost, accessibility to grocery, public transportation, public schools, hospitals, parks,

cleanliness, sense of safety, and police protection. Analysis of data was conducted to determine the response frequency and correlation between residential categories and satisfaction. A total of 192 residents completed the survey. The majority of the respondents were homeowners (n=132; 69%). Average satisfaction ratings of housing units range from 3.4 to 4.38 out of 5-point scale indicating moderate satisfaction while homeowners rated higher satisfactions than renters. Average housing satisfaction ratings of range from 3.4 to 4.38 out of 5-point scale. Almost half of the respondents (45%) spend between \$200-300 for their monthly energy bill which is much higher than national average cost of \$114. The correlation analysis indicates that homeownership is positively associated with the length of residency ($r=0.276$; $p < 0.05$), satisfaction level with spaciousness ($r=0.174$; $p < 0.06$), and satisfaction with HVAC systems of their houses ($r=0.197$; $p < 0.01$). Average community satisfaction ratings range from 2.91 to 4.20. Cleanliness, safety, and police protection received relatively lower ratings. Based on the obtained data, overall residents are moderately satisfied with residential environments. However, regardless of satisfaction level, efficiency of HVAC system and insulation requires further consideration in housing improvement planning.

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Apps for the School Safety: An Integrated Wayfinding System Development for the Effective Evacuation in Public Schools

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Abstract

Over the past decades, crime and threat of violence in schools in the U.S. have caused significant damage to young students, teachers, school staffs, and their family members. In 2011, about seven percent of students in grades 7 through 9 reported to have been threatened with weapons, including firearms, knives, or clubs. In 2012, students between the ages of 12 and 18 experienced over 749,000 cases of violence at schools (Robers et al., 2014). When an emergency happens in school, regardless of whether it is a crime or a natural disaster, it causes much harm to many people at once. A more effective and easy-to-use system than the current system should be considered to protect students, teachers, and other school personnel from unexpected incidents at school. Based on the initial site visit and observations in 20 public schools in Michigan, we identified the lack of effective wayfinding systems. In emergencies, most people follow coded information, such as signs on the walls of an escape route (Maina & Audu, 2016). Since most evacuees rely on signage for wayfinding, it is important to provide correct and appropriate evacuation signs for all emergency cases (Mandel & Johnston, 2014). In addition to signage on the walls, the research team evaluated the smartphone applications to improve the wayfinding for students within the building. The team assumed that school students and the staff have their own smartphones. During panic-induced activities, it is important to reduce two different times, the pre-movement time and the time of the last person leaving a building (Kholshchevnikov et al., 2012). Decreasing the evacuation time can prevent further damages, such as injury or death from critical incidents. Therefore, appropriately installed signage and the integrated system should be developed simultaneously. A wayfinding system based on each school floor plan that alerts correctly without flaws

can shorten the pre-movement time. Hence, this research was conducted in two phases. In the first phase, the research team collected data about the visible locations for evacuation signage using the technique of isovist in 20 public schools in the mid-Michigan region. If signs were not installed appropriately, researchers provided suggestions to change the locations of the signs. In the second phase, a new wayfinding system based on a smartphone application was developed. Many existing alert systems using an application have experienced significant problems with pinpointing the exact locations of individuals within the building. Since it is difficult to detect the classroom where each individual is located, the existing system has not been able to provide the correct escape route to individuals during the emergency situations. To resolve this issue, the newly developed wayfinding application was programmed by considering the precise school building layout, exits, windows, and entrances to provide a correct evacuation route to each individual without using GPS or wireless internet services. This integrated wayfinding application will be tested with 15 students in three different schools to verify the effectiveness of its function as the step 3 of the research. The main outcome of this research would be an integrated system with interior signage and wayfinding technology to promote the safety of students and teachers during school hours.

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Bridging the Gap: Connecting Student Preferences with Design Intention

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Abstract

The field of architecture is often criticized for excluding end users from architectural discourse and design (Hill, 1999). This top-down model often inhibits the well-intended behaviors within those structures. To address these concerns, this qualitative study attempts to bridge that gap with the intent to inform practice by exploring student perceptions of the physical space. By highlighting the voices of occupants, this study employs a critical, yet pragmatic approach towards understanding the relationship between the primary user and the built environment. The intent of this study is not only to understand how undergraduate students perceive their physical learning spaces, but also to delve into how they talk about, relate to, and feel about the physical environments. Undergraduate students enrolled in two entry-level statistics courses were surveyed. Classes were taught in a technology-enhanced classroom and a traditional lecture hall. Participants were asked, what are your general feelings about this classroom space?, at both time points. This question was intentionally designed to obtain a breadth of responses from participants. The primary research question guiding this inquiry is: How do undergraduate students feel about their physical learning environment? Open coding was distilled down into descriptive codes of student responses and then thematic categories were generated to address student feelings towards the physical learning environment. To further understand the relationship between student perceptions and the built learning environment, the following research question is raised: Do those feelings differ in a traditional classroom space versus a technology-enhanced classroom space? Different environments can generate different attitudes and feelings toward the physical learning environment. Thematic categories were sorted between groups. The third inquiry of this study was to explore the differences between student responses according to details at the individual level.

This exploration is addressed through the following research question: Are there differences in student feelings toward the physical classroom space based on individual differences (university major, grade level, and course performance)? Perceptions of space can be influenced by socio-cultural experiences and expectations (Israel, 2003). Recognizing the presence or absence of these differences can inform how to serve a diverse student population. Three cycles of coding revealed 27 total themes present in student responses. Students were primarily concerned with how crowded they felt, how easily they could see their professor, the usefulness and functionality of technology, and stimulation with regards to the intended behavior, learning. Some differences were found within the group of students that learned in the technology-enhanced classroom versus the traditional classroom in terms of what themes were the most salient. For example, views of the professor were more salient for those students learning in the technology-enhanced classroom but a feeling of crowding was more salient for students learning in the traditional lecture hall. Even though student feelings were broad in terms of theme and magnitude of feelings, results did not indicate any obvious differences between student feelings based on university major, grade level, or academic performance. This critical inquiry attempts to examine students' general feelings about the physical learning environment in which they learn and whether those feelings are influenced by classroom type and individual differences. This study indicates that undergraduate students have a multitude of feelings toward the same classroom space. This key finding emphasizes the necessity for the end-user to have the greatest influence on the design process (Montgomery, 2008). Further, the physical space can serve as a catalyst to encourage the disruption of power structures in educational institutions.

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Critical heritage-based programming (CHP): Constructing diverse knowledge

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Abstract

Relevance / Problem Our heritage reveals our core values. Heritage encompasses our identity and how we work to present ourselves to the world as an individual and as a member of groups. Whether in stories, actions, artifacts, or beliefs, our heritage explains us. Accessing such clarity and richness to understand a client is difficult, particularly for students. As a result, students may substitute false parameters such as stereotypes or generic solutions for rich programming and problem identification. **Narrative approaches** capture and uncover user-based descriptions of values (Carmel-Gilfilen & Portillo, 2015). How can using a critical heritage-based programming process (CHP) based on narrative research orient design problem-solving to understand user identity and values? **Context** Individuals use critical heritage “to construct, reconstruct and negotiate...identities and social and cultural values...in the present” (Smith, 2006, 3). Everyone plies history to create their heritage and assert it through the narratives of their lives. Narrative research methods provide powerful tools for designers to understand the world and identities people have created and desire (Danko, Meneely, & Portillo, 2006). The narrative approach captures intangible information otherwise “resist[ing] quantification” (Budd, 2000, 59). A narrative process relies on shared understanding between narrator (client/user) and listener (designer). This constructivist space links individuals’ stories of identity, experiences, and claims to power and existence (e.g., Bennett, 2017). The intersections expand the range of issues students and professional designers may consider. **Method** Programming processes based around understanding critical heritage were documented as part of student-led design engagement in three communities. The programming included oral histories, student-led participatory design activities, and contextual research. Discussions regarding intercultural awareness (e.g., cultural experience, age) and privilege were integrated into preparation for community engagement. Students used grounded theory to

analyze interviews and evidence from the participatory design processes. The projects complied with research ethics and obligations (IRB). The analysis presented here draws from literature, researcher observation, and student work products. Outcomes Building from preliminary work presented elsewhere, the presentation outlines a critical heritage-based model for guiding programming processes in historic and contemporary settings. The model systematizes previously reported benefits (i.e., inclusion of unrepresented voices, emphasis on conscious choices, and understanding of stakeholder values). The CHP model also emphasizes the importance of intercultural maturity and a constructivist/participatory mentality in critical, community engagement (e.g., Bennett, 2017). Using the CHP model can teach students the power of thoughtful programming, moral imagination, and equity through design. Critical heritage-based programming promotes the values, concerns, and solutions sought by a diverse range of stakeholders. Advancement of design knowledge Although the CHP model is not a stand-alone programming tool, the thick descriptive information and constructed understanding it produces alters how designers see and solve problems. The CHP approach to gathering programming information captures ideas about how people understand their past and what they want for the future. Methodologically sound approaches to programming are essential skills for designers to learn. As designers recognize the imperative for more diverse, inclusive, and equitable interaction between designers and users, they need tools grounded in critical understandings of clients' values and goals. Critical heritage-based programming provides one potential tool to achieve this objective.

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Does Access to a Green Classroom increase Eco-literacy? A study of two side-by-side fifth grade classrooms

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Abstract

Environmentalism David Orr mused that “academic architecture is a kind of crystallized pedagogy and that buildings have their own hidden curriculum that teaches as effectively as any course taught in them” (Orr, 2004, p. 226). Orr’s call to consider the “architecture as pedagogy” (Orr, 2004) catalyzes a unique way of thinking about the role of the built environment in sustainability education. The vast majority of learners in the U.S. attend schools with outdated, unsustainable buildings (Tanner, 2000) that quietly imply that resource conservation is not a priority. Even schools with environmentally friendly facilities may be failing to make the connections between their schools buildings and the educational processes within (Upitis, 2004). However, school design presents a powerful venue for hands-on science education on themes such as energy, water, indoor toxins, and material lifecycles. These themes can be addressed by the total building architecture, but it is the school interior – where the vast majority of learning takes place -- that carries the strongest potential to provide interconnections between green buildings and formal science education. This exploratory study examined outcomes for student ecological literacy (eco-literacy) as a result of using a green classroom daily. This naturalistic inquiry (Patton, 2001) was conducted by an interdisciplinary team led by an interior design scholar and an educational scholar. The study took place within two 5th-grade classrooms in one public elementary school in the Midwestern U.S. A unique feature of the school was that half of the 5th grade class occupied a portable classroom (a trailer) and the other half used a one-room building called the “Eco-Schoolhouse,” which was a LEED-certified green building. The Eco-schoolhouse included features such as an airlock, energy recovery unit, and environmentally friendly

interior materials. The study spanned one academic year and featured a mixed-methods approach to address the following research question: How do 5th-grade students' eco-literacy outcomes a) change across the school year, and b) differ across green and non-green classrooms? For the purposes of this study, "ecological literacy" was operationalized as understanding of ecological links, understanding of human links (green building practices), and ability to ecologically reason (Jordan et al., 2009). Data collection occurred at the beginning and end of the school year through a student survey (n=44), student drawings (n=54), student interviews (n=6), and classroom observations. In-depth teacher interviews (n=2) were conducted at the end of the year. Survey results were analyzed quantitatively. Student drawings and interview transcripts were coded in a multi-step process by a research team of three using the Jordan et al. (2009) framework for rubric development. Each coding iteration was discussed and modified as necessary. Inter-rater reliability was calculated using Cohen's Kappa. Overall, students in both classrooms developed eco-literacy, yet the ways in which they did so differed by classroom. While students in both classrooms increased in green building knowledge, students in the Eco-Schoolhouse made positive connections between buildings and ecosystems and showed a heightened sense of participation. Students in the portable classroom presented the relationship between their building and the ecosystem in a negative light and did not see themselves as participants of the ecosystem. Despite noticeable gains in eco-literacy across classrooms, we conclude that green building curriculum is yet needed to build stronger intellectual foundations for ecological literacy. The study further makes the case for the role of green design in enhancing positive affective dispositions in the process of learning science.

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Effectively Teaching Universal Design in Interior Design Programs

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Abstract

According to the 2015 U.S. Census, almost 40 million Americans reported having a physical disability, which translates to 12.6% of the civilian non-institutionalized U.S. population; this number is expected to increase as life spans increase. In 2016, the Population Reference Bureau reported that “the number of Americans ages 65 and older is projected to more than double from 46 million today to over 98 million by 2060, and the 65-and-older age group’s share of the total population will rise to nearly 24% from 15%. These demographic shifts bring challenges, especially for designers, advocates, and anyone interested in making physical and visual environments more usable for people of varied levels of ability. The approach known as universal design, inclusive design, or design for all has become a way to address not only the challenges, but also the opportunities inherent in changing populations. While some design disciplines have not embraced this concept, interior design educators have lead the charge to incorporate universal design theory and practice into their curricula. But what are they doing and how are they doing it? Presenting researchers conducted an online survey to assess the state of universal design education in accredited interior design curricula. The research team distributed the survey to interior design educators and administrators in all institutions with accredited degree programs in the U.S. The study, sponsored by the National Endowment for the Arts (NEA), consisted of both qualitative and quantitative questions that sought information related to the understanding, attitudes, and incorporation of universal design into the curriculum of each participant’s program. Researchers shared preliminary results at the 2018 IDEC conference. The proposed presentation will report final results and accompanying analysis. Analyses of the final survey findings not only show direct responses to survey

questions, but also relationships between the questions. Qualitative and quantitative results show variability across schools, in terms of how, when (course level), and the degree to which universal design aspects are incorporated into curricula. In addition, surveyed faculty made suggestions for the improvement of universal design curricula in their own programs as well as programs across the U.S. Implications for interior design education and practice, as well as future research opportunities, will be discussed.

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Establishing a Conceptual Framework Addressing Layouts and Services of the Built Environments in Continuing Care Retirement Communities with Capital Value

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Abstract

Capitalist society operates its socio-economic system by the exchange of capital values (Rand, Branden, Greenspan, & Hessen, 1986). Design has been developed, aligned with socio-economic development (Davis, 2017), and recognized as a service industry (Nelson & Stolterman, 2000). Living in a capitalist society as a designer, it is important to provide capital value through design outputs. Particularly, in designing the built environment, it is important to understand the opportunity of seeing capital value as a designed built environment, and as a strategy of risk management. Because, according to Value creation theory (Heskett, Dilnot, Boztepe, & Poggenpohl, 2017), more resources should be invested in the built environment as compared to other design disciplines in terms of Capital, Labor, Technology/Idea. Understanding this important opportunity, this research explores layouts of facilities and services in the built environment of Continuing Care Retirement Communities (CCRCs) in North Carolina (NC) as capital value. The CCRCs have been the leading trend in senior living facilities since 2010 (Curran, 2017), and NC is one of ten states with the most CCRCs in the U.S (Zarem, 2010). This research aims to 1) outline determinants of the capital value of CCRC industry, 2) establish influencers on the outlined determinants in the built environment of CCRCs, 3) outline a theoretical connection between those influencers and the determinants, and 4) create a framework of the influencers and determinants to maximize the capital value of the CCRC business in NC. To achieve these purposes, with a theoretical perspective of program theory (Rossi, Lipsey, & Freeman, 2004), this research breaks down the built environment of CCRCs into elements of facilities and services which are potential influencers as

Resources in the program theory. The research, also, applies a framework of Econometrics (Cerulli, 2015) to measure each amount of influence per the separated elements. Reflecting this theoretical perspective and conceptual framework, the research questions for this study are: 1) What are the dependable variables impacting the economic benefit of CCRCs? 2) What are the independent variables influencing the dependable variables, and 3) What is a possible layout of a CCRC to maximize its economic benefit? In response to these research questions, this research is conducted in four phases: 1) documentation review, 2) data collection, 3) data analysis, 4) conceptualizing a theoretical connection, and 5) proposing a layout. In the first phase, this research reviewed the configurations of revenue structures in CCRCs (US Census, 2017) and outlined dependable variables of the CCRCs' revenue. By reviewing 1) previous research with keywords "evaluation" and "built environment," particularly regarding Post-Occupancy Evaluation (Anderzhon, Fraley, & Green, 2007) and 2) regulations and codes for CCRCs from North Carolina Department of Insurance (NCDOI), independent variables were identified. In the second phase, data was collected about fifty-nine CCRCs in NC for twelve years (2006-2017) through the NCDOI. The data is being analyzed through statistical analysis methods, particularly correlation analysis and regression modeling. As a result, the influence of the independent variables on the dependable variable will be understood. Moreover, by using the degrees of influence, an optimized layout of CCRC facilitates to maximize economic feasibility will be proposed. This research is limited to a specific area of NC but is generalizable in investigating a relationship between elements of the built environment, layouts of the built environment, and economic benefits in CCRC facilities and services across the nation. As a result, this research is beneficial to architects, interior designers, developers, and investors in the senior living industry. Furthermore, this research can be a link between research-based and studio-based classes in Interior design program

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Home is where we age: Implications of housing design and home modification to aging-in-place

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Abstract

With 10,000 Baby Boomers turning 65 every day in the U.S., approximately one out of three American households will be headed by someone aged 65 or older by the year 2035 [1]. The majority of Boomers prefer to remain independent in their homes - even when their functional abilities decline and their safety is compromised [2] - yet only about 1% of American homes are designed to accommodate this preference [1]. This prevailing housing design failure has spurred the use of home modifications as an important means for older adults to age in place. Home modifications refer to environmental adaptations made to a home through architectural modification or the addition of assistive technology in order to enhance functional independence, prevent accidents, and facilitate caregiving. Traditionally falling into the realm of occupational therapy, literature on home modification mainly focused on net increase in functional independence of older adults while paying little attention to housing design features that render such benefits. The purpose of this project is to develop and test a set of advanced tracking technologies in order to systematically document interior features and track elders' movements within their homes and to determine how the interior features of homes and their modifications influence the functional independence, mental wellbeing, mobility, and health related adaptive behaviors of the occupants. We followed and assessed six community living frail elders who received modifications and tracked their movements for a 24-hour period both pre and posttest. The collected data is analyzed and presented using the core concept of Personal Activity Space [PAS] as a unit of

analysis. We define PAS as a spatial boundary within which an individual routinely undertakes a certain daily activity. Each PAS unit contains 360-degree images of individual spaces, coordinated with the participant's behavioral data curated within the space. The behavioral data include quantitative data of psycho-physiological signals [Electro Dermal Activity (EDA) & Heart Rate Variability (HRV)] as proxy indicators for stress levels, mobility levels, functional assessments, the participant's self-reported sense of wellbeing while conducting activities within the space, and the types and incidences of adaptive behaviors. It also included a set of qualitative data including spatial properties, the nature of adaptive behaviors and participants' reasoning behind them, and the participants' assessments of the designs. The created PAS dataset demonstrates that: (1) the proposed data collection method using multiple tracking devices yields a highly accurate and rich data set where numerous design implications can be effectively drawn; (2) building a larger database is possible with the proposed method in order to draw statistically valid research outcome. The comparison of the PAS pre and posttest demonstrates that, although statistical analysis was not intended due to small sample size, older adults showed selectively improved functional independence and mental well being. More study with larger sample size is thus called for. In order to further advance the proposed methodology, a higher level of automation is necessary to facilitate data fusion for larger scale data collection. Additional resource supports for dealing with large data sets, and interdisciplinary collaboration for meaningful interpretation of collected data are also called for. Utility of this data collection and database building is many, as it will inform not only home modification practices but also design and planning practitioners when designing new construction, where the root cause of housing failure can be more effectively addressed. The database can also provide valuable information for design education and for interdisciplinary collaboration with its use of real life examples and health data connected to each spatial unit.

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Inclusive design assessment of state park buildings for senior citizens

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Abstract

State parks provide opportunities for recreation to people of all ages and abilities. The built facilities of these parks contribute a lot towards defining their overall experience. It is crucial to have a comprehensive understanding of diverse user needs to ensure their inclusiveness and satisfaction. Currently, state park buildings follow ADA guidelines which are limited in providing accessibility to a wide variety of visitors. Thus, there is a need to go beyond ADA guidelines to enhance inclusiveness of state park buildings. The purpose of this study is to assess the current inclusiveness of state park buildings from the perspective of senior citizens in the form of their satisfaction level, along with their recommendations for design improvements. To achieve this purpose, a focus group of nine senior citizens was utilized. This is because a focus group not only represents a bigger population (Breen, 2006), but it also gives an opportunity for in-depth discussion and exploration of issues (Clarkson et al., 2003). There were five male and four female participants in focus group, each of age 70 or above. This study was conducted in one of the representative state park of Michigan having variety of built facilities, including old, partially renovated, and a new, ADA compliant building. Each participant had different set of physical abilities, such as hearing, walking, breathing, vision, heart, and diabetic problems. They visited four state park buildings in March 2018. To facilitate them, a questionnaire was developed having questions about parking lot, exterior route from parking to the building entrance, entrance and doorways of the building, interior routes and surfaces, bathrooms, bedrooms, and signage and wayfinding conditions. The scale used for each question was from 1 being “very unsatisfied” to 5 being “very satisfied.” Before the visit, participants were briefed about the facility. During to the visit of each building, participants filled out the questionnaire and discussed their opinions with the moderator. The results indicated that participants were least satisfied with the design of old buildings. They showed a

little higher satisfaction with the partially renovated building, and maximum satisfaction with the newly constructed, ADA compliant building. Yet, they did not show hundred percent satisfaction with either of the buildings. This further highlighted the fact that ADA guidelines are not enough for achieving maximum inclusiveness in the designs. Participants also provided with several design recommendations to improve inclusiveness of these buildings. For parking, the distance between parking lot and the building entrance along with properly designed drop-off area should be considered. Areas that have snow, parking lots should be cleared out regularly to reduce accidents caused by hidden puddles or pots. Public seating should be provided at small intervals, along with proper light arrangements on exterior routes. Entrances should be properly marked, having ramps in case of a level difference. Doors should be automatic or have properly marked push buttons to facilitate visitors with vision problems. Level differences should be identified with material or color change. Material and color in the interior should also be given careful attention considering the variety of visitors. Buildings having elevators should have them clearly marked and identified in wayfinding maps. In bathrooms, security arrangements and height of fixtures should be considered carefully. Design details such as, dados, and borders should be designed carefully to avoid accidents. In bedrooms, furniture height, and layout is important as senior citizens shrink with age and find it hard to use regular size furniture. Finally, signage and wayfinding devices should be properly designed to facilitate the diverse visitors at every part. This study highlights the importance of getting user feedback for inclusive design in state park buildings.

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Lighting a Fundamental Human Need: A Study of Energy Access and Lighting Usage in Rural India

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Abstract

Introduction: The International Energy Agency states that 1.3 billion people lack access to electricity and another billion lack reliable access. Lighting is a fundamental human need and having access to affordable, reliable and sustainable energy is vital to improving the economic, social and health conditions of millions globally. This study assessed household access to electricity in rural India and evaluated the use of off-grid delivery systems such as solar and LED lights on daily living. Understanding how communities cope with everyday living without access to light is relevant to the interior design profession as research provides insights into fundamental lighting needs of a community while recommending lighting solutions to make a positive social impact. **Context:** Imagine life without light. We take for granted the ability to see, read, write and work after sunset but millions of poor are unable to do so for they lack access to light. United Nation's Sustainable Development Summit of 2015 proposed seventeen goals to end poverty by 2030 and transform lives while also protecting the planet. Goal 7 deals specifically with energy—"Ensure access to affordable, reliable, sustainable and modern energy for all" (Sustainable Development Summit, 2015). This study used a five tier system developed by the Sustainable Energy for ALL (SE4ALL 2013) to capture the level of energy access in the household. Specific objectives of the study are: 1. Assess lighting systems used in home environments of a rural community in India. 2. Assess home owner's access to light when electricity is not available. 3. Understand the users' needs, desires and concerns about access to energy and light. 4. Provide achievable lighting solutions that consider safety, efficiency and non-dependency on the electric grid while having a positive social impact on the community. **Methods:** This is a case study of an agrarian rural community of 24 households with limited energy access conducted in India by the researcher as

part of her sabbatical. Data was gathered using home survey to account for the types of light sources and lighting available at home; Interviews (see Appendix 1) and digital recordings were conducted to ascertain energy usage, services and products used by families in the community. Outcomes: An assessment of the home environment revealed that most homes used a mixture of light including incandescent, fluorescent and LED. Almost 100% of the light sources were installed as bare lamps with no cover to direct the light. Sixty-Seven percent (n= 16 of 24) of households used kerosene lamps along with charger lights (see Table 1) to mitigate power outage problems. Only eight households were able to afford an inverter (battery to store electricity) which was used to supply power to one or two light sources in the home during power loss. Based on the SE4ALL tier system 42% households fell in tier 3 category (see Table 2). Power outage for several hours during the day was common including the scheduled all-day outage on Thursdays. Besides light for task, all deemed the TV to be the most valued electronic device for this was their primary source of entertainment and connection to the outside world. Interest in low cost inverters was also high. The rural dweller showed no interest in solar energy mainly because they did not understand how it worked and feared its cost. Significance: Educating the poorest of the community regarding initial vs. operating cost convinced them to switch from incandescent to LED light. Plans to contact NGO's and Phillips lighting to install two solar powered street lights –one outside the community store and one near the school where the community children attended night prayers is in works. Students enrolled in lighting class were exposed to lighting conditions in developing countries heightening their awareness of sustainability issues and developing empathy for the less fortunate global community.

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Measuring Perceived Retail Crowding (PRC) in retail environments through Functional near-infrared spectroscopy (fNIR)

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Abstract

Perceived crowding is a psychological state that occurs when a person's demand for space exceeds the supply (Stokols, 1972). Perceived Retail Crowding (PRC) can therefore be understood as an individual's demand for space in a retail environment. Machleit, Kellaris, & Eroglu (1994) states that PRC consists of two dimensions: human crowding perceptions and spatial crowding perceptions. Research has shown PRC negatively affects shopping satisfaction (Eroglu, Machleit, & Barr, 2005) Previous studies have analyzed spatial crowding perception (Baum, & Davis, 1976; Machleit, Kellaris, & Eroglu, 1994). In this study, two different retail environment layouts (organic and linear) were developed using Virtual Reality(VR) to understand the difference in spatial crowding perception of these two environments. The retail spaces were created first using SketchUp, a software that helps a designer visualize and bring their concepts into perspective. The interiors for retail environments were developed based previous research on crowding (Baum, 1976). The primary hypothesis was that perceived crowding is higher in organic layouts than linear layouts due to the unfamiliarity of that interior space planning. 60 participants were randomly assigned to two Virtual Reality (VR) environments and spent approximately 5-7 minutes in the environment. The participant's emotional responses were recorded through a Functional near-infrared spectroscopy (fNIR) device. They were also provided with a questionnaire to assess their emotional responses to the environment. Perceived Retail Crowding (PRC) was assessed through the emotional responses of the participants. The results of the study provide a new objective methodology of understanding human responses to retail environments as well as provide guidelines for designing retail interior environments.

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Tactile maps for visually impaired individuals

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Abstract

Spatial navigation is a complex endeavor relying heavily on situational sensory information gathering and evaluation. In extreme circumstances, a lack of data can cause uneasiness, tension, and fear. For many people visual cues provide the greatest means of orientation and subsequent comfort. Considering the importance of visual data, what is the effect if access is restricted? How does a visually impaired individual locate themselves within space? Established analog methods of environmental orientation for visually impaired individuals include the tapping of a cane (Hersh 2015) or the production of clicking sounds to promote echolocation (Vercillo, Milne, Gori, and Goodale 2015). Newer digital methods of navigational assistance include advanced technology such as global positioning systems (GPS) or depth sensing devices (Dhod, Singh, Singh, and Kaur 2017). It is the aim of this study to promote inclusive environments for visually impaired individuals by investigating the effectiveness of combining analog and digital methods of information transference in order to fill gaps in spatial knowledge. The primary method under examination focuses on three-dimensional (3D) tactile maps. These maps utilize newer technologies to infuse 3D surfaces with information that is typically transmitted through visual means. Due to cost reductions in 3D printers, 3D scanners, and materials, as well as the ever-expanding digital repository of environmental spatial data, the process of documenting and printing an environment is now cost effective and time efficient. This ongoing study to understand the possibilities, limitations, and uses of 3D printing environments for the visually impaired has produced tactile map artifacts that are both useful for evaluation and serve as an example of how difficult certain information transference can be when not conducted within a visual system. Using two-dimensional CAD files, aerial photographs, and site visits, portions of a campus environment were digitally modeled and manipulated. These 3D digital models were then printed with a standard, consumer grade 3D printer using polylactic

acid (PLA) bioplastic. This was done in order to experiment with what types of information could be accessed through touch. Multiple iterations of both interior and exterior environments were modeled and printed. After each iteration, the resultant tactile map was evaluated for communication effectiveness. Issues of scale, texture, and the appropriate amount of information to include on the surface were the primary areas of interest. Distance was addressed not with a standard architectural or engineering scale, but instead with a customizable scale that referenced the number of steps needed to cover a defined distance. Texture was used as a primary means of conveying information. Depending on the texture size, information such as hazards, walking paths, and building heights could be communicated. Because of the low-cost of 3D printing and the ease of manipulating the digital models, customization to specific scenarios was possible. Findings suggest the creation of the 3D tactile maps is an exercise in information filtering. As opposed to traditional 3D architectural models which include a vast array of visual information, these 3D maps for visually impaired navigation have less information but the included information is presented in a highly focused manner. As an example, it is not so important to model walking paths and buildings as they truly are, what is more important is the relationship of the paths to the building access points. During the presentation, multiple iterations of the tactile maps will be displayed (a sample of this can be seen in the submission Appendix). These abstracted environments are to be handled by conference participants in order to gain a better understanding of what data can and cannot be effectively transmitted through touch.

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The Gender Paradigm: a shift towards universal accommodation

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Abstract

The topic of gender is rapidly evolving and continues to be at the forefront of social, political and architectural dialogues. The existing paradigm of gendered space: separation based on male/female physiological differences and a perceived need to protect safety, security and privacy is being challenged. “Pick a gender and go with it”: this seems to be the mindset of many when confronted with the topic. Substantial attention is being given to translating gendered places of public accommodation, primarily the public toilet, to include individuals who align alternatively within the gender binary: primarily trans populations. Although laudable in intent, current models continue to force individuals to identify within the gender binary or segregate them as special populations: the “other”. Gender is now being described as a spectrum: including cisgender, transgender, agender and genderqueer with many new terms on the horizon. Research suggests that as many as 1,000,000 Americans identify outside of cisgender “norms”. In many countries and some US states, a third gender (X) is being recognized. The public bathroom has changed our thinking of design. Gender neutral, segregated accommodations are being implemented to satisfy the needs of this population, but in a manner reminiscent of the 19th century Jim Crow Laws: separate cannot be equal. This presentation will review the existing literature on the gender spectrum, establish perceived vs. actual barriers to implementation and identify the needs to de-gender environments to support the design of areas of public accommodation considerate of the health and well-being of all. The existing body of research is focused on the public toilet and trans individuals. Little investigation examines the widened gender spectrum, or inclusion of varied types of gendered space within the built environment: including retail dressing or locker and shower rooms. Primary findings determined the perceived barriers to implementation of non-gendered spaces include: perceptions of privacy and security, religious concerns and loss of gender space culture. Gender spaces,

although a social rather than physical safety barrier, are perceived as places of escape, respite and for many, considered “sacred” space for gender specific socialization. Findings support that most of these perceived barriers can be addressed with greater levels of satisfaction within the application of non-gendered environments. Research further points to the need to remove the term “gender” in identifying all forms of public accommodation in order to de-stigmatize those outside the gender binary, while still embracing social, cultural and privacy needs. Current solutions to address non-binary populations focus on the inclusion of single use facilities often labeled to service families and the disabled, or “all gender”: accommodations that are often relegated to ancillary locations and are limited in their application. Non-binary and people with disabilities have been inexorably linked due to the lack of substantive access to public accommodation. The stigma created by these segregationist architectural models which enforce the cultural norms of the able-bodied gender binary, impacts them equally: shame, discrimination, social rejection, limited social integration, lack of sense and meaning of place. The design field has begun a shift in the paradigm, but to consider this topic satisfied in its new aim is far from realistic. Current solutions are not considering the holistic qualities of gendered space and continue to support a social and cultural exclusion of individuals on the gender spectrum. Design should foster cultures of inclusivity in public accommodation. As long as we support and continue to drive the existing paradigm of gendered space, in our design applications, these innate human needs will not be addressed. Separate is not equal. It is time for a paradigm shift to a true universally designed model.

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The green museum as a teaching tool for sustainability: Design strategies to engage the public in green building education

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Abstract

Among building types, museums are distinct in their efforts to engage the public through design. Design is commonly employed as a form of non-verbal communication, and museums use their buildings to brand the institution and represent their values to the public (Lindsay, 2016). Of the many values design may impart, we are particularly interested in those surrounding environmental sustainability, and the ways in which buildings can further public green building education. Science museums with certified green buildings present a natural opportunity to study how science – and particularly green building science – is communicated to the public. Science museums are increasingly using green building construction practices for new buildings, and some go so far as to consider the surrounding landscape as part of the museum’s “collection” to be preserved (Lindsay, 2016). Science museums with green buildings have the institutional mission and necessary infrastructure to make novel connections between buildings, human behavior, and ecology. But do they? How do they do it? To answer questions such as these, this project explores the use of green science museum design as a communication tool. This project is a collaboration between an interior design scholar who focuses on green interiors and an architectural scholar of museum architecture. Our overarching goal is to examine how science museums use their green buildings to further green building education. The current presentation will focus on one aspect within the larger study: What strategies do green science museums use to engage the public in green building education? Answering this question has practical implications for museum administrators and designers to integrate green building education into exhibitionary practice. The question additionally has theoretical implications for advancing understanding of the mechanisms of free-choice

environmental education (Falk, 2005) and prospects for green building literacy (Jan et al., 2012). This qualitative case study project is a multiple-case design with multiple embedded units of analysis (Yin, 2017). In our study, “green building” is defined as one that has obtained certification by the United States Green Building Council’s “Leadership in Energy and Environmental Design” (LEED) rating system (USGBC, 2016). Mixed-method data collection included gathering: 1) Public relation (PR) materials about the museum’s green building created by the museum, 2) Press about the green building, 3) Photographs and memos from site visits, and 4) Interviews with museum staff where access was granted. This presentation focuses on the documents collected from site visits to reveal design strategies used by museums to engage visitors in their green buildings. Members of the research team used a site visit protocol when visiting the buildings. We collected print material (museum maps, etc.) and sought all areas of the museum where information about the green building was displayed. Extensive photographs and memos were created from each visit. The information was analyzed using Dedoose qualitative software, where site photos were uploaded into the program and coded by a three-member research team. Using the Cole (2014) “Teaching Green Building Model for Learning” as a starting point, the team worked collaboratively and iteratively to determine start codes and focus codes that informed the development of final themes (triangulating with PR, interview, and press data as helpful). Our findings show that the majority of green building education strategies currently used by museums are classified as instructional/passive learning techniques (e.g., brochures and signage on the walls). We suggest that many science museums are yet missing opportunities to leverage their own green building into programming that is more experiential and connected to the socio-cultural and ecological contexts of their unique settings.

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The State of Cohousing in North America

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Abstract

What is cohousing, and why is it rapidly growing across 47 US states and 6 Canadian provinces? The author will share the results of an extensive report on the State of Cohousing as an emerging archetype in North America. The report includes a meta-analysis of literature, and the results of a five-year, multi-tiered study on cohousing that spans Arizona, Washington, North Carolina, Virginia and Taiwan. The field investigation consists of community photo-documentaries, cohousing resident interviews, and action research that includes the development of three cohousing communities. The author will share strategies, best practices and findings from multiple cohousing workshops conducted by the founders of cohousing in North America. The Report highlights:

- Graphical examples that define architectural and design characteristics of as-built and developing cohousing, all extracted from design-building processes, plans and documents of cohousing residents, cohousing design professionals, cohousing scholars and students of cohousing.
- Principles and practices of the cohousing community dynamic governance process and various models, including consent/consensus, majority-rule and sociacracy.
- Methods of social-capital construction, highlighting its evolution from community forming to building, and community maintenance, or eventual dissolution.
- Social capital and co-caring as emerging global trends, and the concept of elder cohousing as an option for aging-in-place
- The economic viability and high resale value of cohousing, with a brief summary on The 2010 Report on Affordable Cohousing. (A greater effort toward affordability is a goal of The Cohousing Association of the United States).

What is cohousing? The author will share the results of an extensive report on the State of Cohousing as an emerging archetype in North America. The neighborhood design can vary, but typically consists of townhomes or small, single-family homes clustered around shared common areas. A “common house” that is a commercial space that acts as community center, consisting of a large kitchen and dining room,

and may include laundry facilities, exercise space, meeting/kids' rooms, recreational space, gardens, walkways and parking. Each community determines the amenities of their common house, and it serves as the heart of the neighborhood. Neighbors share all common spaces and resources, and share in the cost of building and maintaining the common house and area. Residents own their own dwellings, which they also design collaboratively while they envision and plan their community. Cohousing is an excellent example of effective participatory design planning. Households have independent incomes and private lives, with dwellings assembled in a legal structure such as an HOA, Condo Association or Housing Cooperative. Fundamental to the success of the cohousing community is building social capital and cooperative interdependence of the residents. The most common bonding event is through shared meals, the frequency and extent of which is determined by the residents, typically between two and five meals per week, with small teams revolving in meal prep and cleaning. In intergenerational cohousing, social capital may be built through shared child-care, playground maintenance or family-centered games and events. In elder-rich cohousing, social capital is often built through co-caring, ride-sharing, group attendance in outside activities, or gathering around a fire with wine and spirits. Every cohousing community has an individual culture and identity, formed in its origin, and evolving over time. Cohousing is an archetype that has survived over thirty years in Scandinavia, and is rapidly emerging as a popular option for socially connected living in North America. This presentation is an in-depth and cumulative descriptive overview of the current State of Cohousing.

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Writing-Casting-Making: a transition from theory to making

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Abstract

Relevance to the Discipline Qualitative theory is still relatively new to the interior design discipline, unlike allied disciplines such as art and architecture that have at least a century of parallel theoretical writings. Theory allows for critical thinking, which in turn, advances a discipline. Through a sequential process of writing-casting-making, a fourth year undergraduate theory seminar in a CIDA accredited program provided students with an opportunity to develop critical thinking and writing skills to develop these relationships. Teaching Issue The teaching issue presented is how to guide students through a design process that utilizes theoretical readings as a starting point. Many of the problems delivered to students early in an interior design curriculum are foundational and address elements such as texture, line, colour, etc. These have foundational theoretical teachings, but what happens at the upper level? How can students continue to develop design solutions that dwell in the realm of qualitative theory before quickly transitioning into design solutions driven by program. Context Students are often referred to classic examples of theoretical readings such as Gaston Bachelard's, *Poetics of Space* first published in 1957, but the topic of theory in interiors has developed so that we can now refer to publications that have grown from within the discipline. These publications open an alternative opportunity to teach how theory can inform the design process. These include *Intimus* (2006), *Toward a New Interior* (2011), *Interior Architecture Theory Reader* (2018), and most recently, the Interior-Inferior-In Theory conference held in Berlin, Germany in May 2018. These have set a new paradigm for interiors. At the same time, a number of journals support these theoretical positions that include the *Journal of Interior Design*, *Interiors: Design/Architecture/Culture*, and the *IDEA Journal*. Instructional Methods The theory seminar course is taught through multiple forms of presentation techniques that include lectures, group discussions, field trips, and workshop tutorials. Weekly readings provide a theoretical foundation and

springboard as the base for assignments that inform the making process. Assignments place emphasis on three areas that complement one another, where writing informs critical thinking; casting informs observation; and making informs application. It is expected that a symbiotic relationship develop between these, which in turn, inform and advance making. While writing and making are more inherent to the traditions of the discipline, casting fulfills a unique role by acting as an intermediate step to reveal familiar forms once removed to a neutral context, much like the works by the British artist, Rachel Whiteread (Mullins 2004). These ways of learning are applied to contexts that increase in scale, starting with the body and ending at the threshold of interior and exterior. Each of these scales plays a role in the interior, whether in the form of wrapping the body as a garment or the threshold of looking out a window. Teaching/Learning Outcomes Please refer to the supporting appendix that includes excerpts from the four assignments along with examples of student work outcomes that include writing, casting, and making in the design process. Significance of Presentation This presentation seeks to convey an approach to teaching where students do not know the outcome of what they will design since each assignment is meant to reveal unanticipated forms. Through a process of synthesizing writing-casting-making, students are asked to invest in 'process' rather than predictable outcomes. The outcomes initiate a dialogue between the faculty member and student that invoke interior design terminology but framed within a body of theory.

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Body, room, home: design exercises on Perec's "Species of spaces"

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Abstract

Some books, not written by architects or designers, are important for architects and designers. Thanks to the different point of view they offer, they become a tool and a container of possibilities, for a theoretical reflection and an intervention through the act of design. One of these books is "Species of Spaces", written in 1974 by George Perec, who describes in a very personal way the different scales of space (furniture, architecture, city, landscape): the interior space, as Bruno Zevi wrote in "Architecture as Space", as the "protagonist of architecture", of the home, of the public building, but also the urban interior of the "environment, the stage on which our life unfold", in which man acts, like an actor in a theatrical play inside the architectural "fixed scene of the vicissitudes of man" (Aldo Rossi). My personal investigation on "Species of Spaces" aims to represent all of this through a series of collages related to the main chapters of the book. So, dealing with this book has been an act of re-reading in which the visual realm has become the main narrative strategy for better understanding and explaining (to myself and the students) the value of Perec's work. The montage of words and images, the former coming from the book itself (cut, re-arranged, pasted), the latter from my own personal iconographic and cultural archive, is not only the final outcome of the research, but an opportunity to find new evocations, suggestions and meanings, to deepen a reflection, a discourse and a project about the interiority and the character of our houses, buildings and cities. The book itself can be read as a collage: the pages are an overlapping, juxtaposition, grafting, stratification of surgical and scientific analysis (where often it's the list/inventory that plays the major role as the first filter to understand space), autobiographical memories, profound confessions and surprising inventions. Like a collage, the book is a metaphor of the palimpsests that surrounds us, where the memory of the past and the hope for the future coexist in the present. So re-reading, re-viewing, re-inventing and finally sharing with the students "Species of Spaces"

meant to define a series of focal points for an investigation on interior design: - Emphasizing the role of an analytical method: list, inventory, description, invention. - Analysis is the foundation of creative action: understanding, analyzing and representing interior spaces and their relationship with human life and activities, in the different scales of design. - Switching to verbal description to graphic representation, through mixed techniques as maps, diagrams, collages. Exercises BODY. The painting of study of St. Jerome by Antonello da Messina, accurately described by Perec at the end of the book, becomes the object of a reflection, through drawings, on anthropometrics and ergonomics and furniture design. Starting from the painting and the dimension of their own body, students find (in plan/section/elevation) the “hidden dimensions” of the wooden study as a place to sit, work, rest, starting from. ROOM. “The Bedroom” pages, where is described the place where, through objects (socks, plastic bowls, postcards pinned on the walls, curtains, wallpapers, parquet flooring), people take possession of the minimal space in which we represent ourselves, are transformed in the “Ideal Room” that students evoke through the collage technique, as a “manifesto” of their inner intimate interior. HOME. The chapter “The Apartment” becomes the script of a theatrical play represented as a diagram. Life and rituals of a family are described hour by hour, moving in the interiors, mapping time and geometry of movements, describing interactions with objects, devices, furniture, recording the entrance and exiting of the actors in home’s topography: students through schemes, diagrams, storyboards represent the choreography of the mise-en-scène of the domestic interior.

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Out of the Cafeteria, into the Agora: Designing Culture Change in the College of Law

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Margaret Portillo, PhD, FIDEC, Associate Dean, Professor and Chair

Abstract

Context Engagement is today's watchword in higher education, and this also holds true for law schools that now embrace active learning environments. New study spaces extend beyond the sacrosanct law library, with its tomes of bound case volumes and legal archives. Technology allows learning to happen outside of the library, and law students are flocking to comfortable study zones for extended time periods. They are seeking places to study and eat, read and review, yet feel part of a larger community of peers and professors. Indeed, law schools today call for a type of "agora" a central gathering place for intellectual immersion and inquiry. Our paper will describe how one university law school invested in design to help reshape its culture, a vision initiated by new dean with the intent to increase diversity, equity, and inclusion. And this sea change called for a rethinking of the physical environment that was designed in the Brutalist architecture of the 1970s. To its student, faculty and stakeholders, the law buildings felt outdated and institutional, and its interior spaces generally lacked a cohesive look and feel. Our design team saw a research-based design approach as offering a way to tackle the daunting task at hand. After spending time in the spaces, and interviewing stakeholders, we tapped into student perceptions using an on-line visual survey that offered the law students a voice to express their ideas. The survey quickly drew an outpouring of over 300 responses by students who were eager to offer input on five potential areas to begin the renovations. A majority of the student respondents (40%) identified "eating areas" as needing improvement, followed by "studying spaces" (26%); indeed, the uncontested point of entry was the school's cafeteria. Method Over a 2-year period, our team of upper division undergraduates, graduate students, and faculty mentors contributed heavily to the redesign of the

cafeteria and are continuing with ongoing law school projects. The process--from pre-design research through construction--involved interior design students and faculty who addressed the cafeteria redesign and related explorations through studio projects, charrettes and special topics courses. Research was infused through the entire project, informing design solutions, through precedent studies, site visits, surveys, and on-the-spot interviews. Outcomes & Conclusions The process exposed tension points (mainly between the law faculty and administration) but also underscored a shared vision and values. As the students were welcomed into the process, they took ownership and surprisingly were unified in their vision for the new space, serving to help diffuse conflicts. Within a highly charged political environment, the research process not only created transparency in communication but formed a common ground on which to move forward. To truly create an agora meant community-building: developing a space marked by diversity and equity. In fact, civility is a hallmark of design thinking and heightened civility is a byproduct of inclusive and thoughtful stakeholder engagement (Dohr & Portillo, 2011). This process led to the development of fresh and original design solutions that resulted in a renovated space that now serves as an agora, a central intellectual hub of the college. Armed with a "vision guide" and "idea boxes" created by the interior design team, the law project liaison was able to better stay on course throughout the process. A research-based and client-centered process not only is expected in interior design education (CIDA, 2018) but in the case of the law school laid the groundwork for a strong relationship with the interior design department that continues to this day, with project commitments extending into the future.

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“It makes the world a better place”: Introducing non-Majors to Interior Design Problem-solving

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Abstract

Introduction As designers we believe the design process is key to creating interior environments that fulfil human needs (Nielson & Taylor, 2011). We are also concerned that others understand the benefits interior designers bring to society through the problem-solving approach. With this background, this project aimed to find out whether students in an open design class could solve an interior design problem using the design process. The goal was to introduce students from other majors to the design process as a tool they could adapt and use in their own field. In addition, students were introduced to Universal Design and the concepts of designing for all. The class was 3 credit, junior level, and met the Liberal Education requirement for Technology & Society. The class met twice a week for 1½ hours.

Method Students (n=25) were purposefully divided into groups of five with at least one design major (graphic designers n=8, architect n=1), and a balance of male/female, international/domestic students to provide diverse perspectives. Students were given a design scenario to improve access and wayfinding for users around an existing health environment. In the first part of the project, students compiled a Program Report, including research on wayfinding, theories of human behavior, and precedent analysis. The second part involved ideation and problem solving. In the final part, students presented their preliminary design solutions. The project was assigned the last six weeks of the semester. Each class the instructor gave a short lecture on a part of the process, e.g., Design Theory, Design Problem Solving, gave students a relevant exercise to work on, then allowed time for group work with instructor feedback and critique. A site visit enabled students to walk around the building, noting particularly difficulties in accessibility. An individual assignment required students to observe users navigating the space.

Findings In the final class presentations, all groups presented well thought-out

solutions and demonstrated they had considered accessibility. Instructor observations were that students, a) came up with a variety of solutions consistent with following a design process, e.g., interactive maps, mobile apps, and color coding, and; b) presented their design solutions in a variety of ways, e.g. graphic images, a model, and cartoon persona “day in the life.” The instructor also wanted to know whether the project had successfully conveyed the benefits of the design process. Students submitted a final reflection paper asking which three topics in the course they found especially interesting and how they would use what they had learned in the future. 27% of students referred to the final project. Comments included: “Although I understand that the process will always be cyclical, this really taught me that the more precise you are in earlier stages of design/development, the following phases can happen more fluidly,” (Psychology major), and; “Our class . . . has encouraged us to use divergent thinking that imagines many, many different types of potential solutions to a problem,” (Journalism major), and; “I appreciated the class activity where we analyzed each step of a journey through a building (approach, entry, reception, etc.) and decomposed the feelings—conscious and subconscious—a user may have through any such experience. I quickly realized that leaving out even one degree of empathy can alienate a user,” (Marketing major). Conclusions Introducing non majors to an interior design problem can give students an appreciation of what interior designers do and how the design process can be applied in their own field. Additionally, students can gain empathy for building users through the lens of Universal Design. As one journalism student stated, “I would highly recommend that people learn about design thinking no matter what their major is because I believe that it makes the world a better place and expands both imagination and

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A First Year Materials Workshop: Gaining Insight to the Properties of Wood through Making

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Abstract

As design education and practice becomes increasingly digital a concerted effort was made to introduce considered physical material interaction into an interdisciplinary first year curriculum at my institution. The hope is that by incorporating critical material discussion and output we will incubate a culture of thoughtful design informed by making. Quite recently numerous authors have called on a return to the valuing of manual skill, from Matthew Crawford's *Shopcraft as Soul Craft*(Ref. 1), Peter Korn's *Why We Make Things and Why it Matters*(Ref. 2), to Metropolis writer Janet Abrams' article *New Craft: A Return to the Hand*(Ref. 3). Using David Pye's writings in *The Nature and Art of Workmanship*(Ref. 4) (perhaps the harbinger of the current movement, now 50 years since published) as a conceptual framing of our inquiry, students were asked to manipulate wood veneer to challenge their understanding of its behaviors, recognize their preconceptions, and take the material fully to failure. Their role became both that of designer and fabricator, contrasting the certainty promised by their computers with the risk inherent to working with the actual material. Bill Kreysler, a skilled composite materials fabricator, effectively summarizes the need for improved materials knowledge as he describes the translation from digital model to physical output: "just because you have a 3D computer program doesn't mean that somehow everything you do is going to be perfect—in fact, it's frequently not the case."(Ref. 5) Schools now commonly implement various means of digital fabrication- laser cutting, CNC routing, 3D printing- but these tools lack the innate materials knowledge that can only come from working a material by hand. A machine is indifferent to grain, variable densities, imperfections. If the designer is ignorant or ambiguous to this non-homogeneity the likelihood of poor design or even failure naturally increases. Held as a three day workshop, two projects were the focus of this materials study. One focused on

utilizing Maple veneer in an area/field format while the second treated the veneer in a directional/vector format. Students were provided a Grasshopper script for each exercise that gave them control over a limited set of parameters to introduce serial differences and allow them individual authorship. They crafted their designs digitally first, then attempted to fabricate them. Over the course of the workshop many came to realize that their initial preconception of the plasticity of the veneer was overly generous. Designs were then revisited with an augmented material strategy informed by their first attempts. Additional variations for fabrication/assembly were largely student driven including soaking the veneer, trying multiple methods of mechanical fastening, and using various adhesives. To conclude the workshop, students were asked to reflect on the process and describe how the activity challenged their understanding of the material and methods for working with it. Examples of their work and reflections are included in the appendix, though in summary they consistently found that their digital ideals required considerable adaptation to successfully fabricate. If accepted as a conference presentation, the digital frameworks of the two projects will be illustrated along with process photographs taken over the course of the workshop. Final student work examples and reflections, naturally, will also have significant presence. The hope is that this workshop format may be seen as approachable and implementable for fellow educators, either as an internally led exercise or as a visiting series of workshops led by the author.

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Behind the Screen: A Study of Light and Shadow

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Abstract

Louis Kahn regarded light as a “giver of all presences... what is made by Light casts a shadow, and the shadow belongs to Light.” Consideration of light and shadow are essential when designing an interior. Behind the Screen is a short-term project aimed at a creative exploration of how light moves through space and its’ relationship with shadow. The project was completed in conjunction with two interior design courses: 1) a small commercial studio and 2) Lighting Systems. In the small commercial studio, students were tasked with the 2018 IDEC Student Competition. The project was to design for spatial and spiritual experiences. The students spent a significant amount of time developing their own concepts, including an evaluation of how light can impact one spatially and spiritually. Meanwhile in the lighting course, the students learned of lighting fundamentals, including the transmission and diffusion of light. Building on the content of the two courses, students were asked to design a screen. As students designed the screens, they were to be cognizant of how light would traverse, the shadows that would occur and how the design could be used to enhance their concept. Next, students were to create physical model and a digital model of the screen. The physical model was created using chipboard and a laser cutter. Students were tasked with photographing the screen in a number of light levels, exploring the interesting patterns their design could make. The digital model was incorporated in their studio projects could be used in a variety of ways i.e. ceiling detail, room divider, and partition. The project objectives were the following: 1. To exercise creativity through hand-sketching and exploration of abstract shapes. Before students could begin designing their screen they had to prove that they had thoughtfully developed their design to support their concept 2. To visualize the quantity and quality of light that would pass through and 3. To exercise the coordination of multiple mediums (hand sketching,

AutoCAD, a laser cutter and Revit) to produce models. This project provided students to have an interactive experiment, truly examining and manipulating light and shadow. Additionally, this project motivated students to utilize their learned lighting skills in a technical application that could also be aesthetically pleasing.

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Civility and Grace in Design

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Abstract

Considering Civility and Grace in Design A concern of our 4th year capstone studios is students' focus on more technical aspects of interior design such as "regulations and guidelines related to construction, products, and materials" (Professional Standards, 2018, p. 30) and "production of interior contract documents including drawings, detailing, schedules, and specifications" (p. 29) that can come at the expense of attention to human-centered design. To revive their sensitivities to the human experience in space, a module on "civility and grace in design" is explored (see Appendix A) in 3 different ways in a lecture course that accompanies studio. The module requires William Stumpf's (1998) book *The Ice Palace that Melted Away: Restoring Civility and Other Lost Virtues to Everyday Life*. Stumpf writes that "[civility] is the something extra – the added measure of grace – in the way we shape human behavior through objects and custom...Civility is toleration, understanding...the integration of differences, not the heightening of them (p. xiii)...Part of design's contribution to a civilized life is to help people make meaningful connections to the real world" (p. 136). Stumpf provides examples of civility, but students grasp his meaning best through discussion in class of a campus memorial that was civil and gracious in its design despite its origin in shock and mourning. The evolution of the memorial is the second way in which civility and grace in design is explored. The story of the memorial begins in a river valley lined with limestone which is the primary building material for the area, including the local university. The school's location in a rural part of the state precipitated a mutual relationship between the school and the town that impacts employment, services, patrons, vendors, businesses, and culture. That this congenial place was the setting for a deadly shooting astounded the nation and staggered the community. The response was immediate and meaningful – from an impromptu candlelight vigil on campus attended by thousands to the arrangement by anonymous students of 33 pieces of limestone in a semicircle on the

lawn in front of the administrative building. This became a place for flowers, candles, mementos, reflection, and grieving. When a decision about a permanent memorial was to be made, the Board of Visitors decided that the design created by the students was best – born from their tragedy, formed of local material, centered at the heart of the campus, integral in the life of the university, at once accessible and personal, honest in material and construction, and transparent in design. It is symbolic, inclusive, functional, sustainable, civil, and gracious. The third and final part of the course module challenged students to review their current studio projects and articulate either by written evaluation or annotated drawing how they might instill civility and grace in their work. Their thoughtfulness revealed the kind of activities, beliefs, or approaches they could adopt to restore civility in design such as • “remembering that people without knowledge are powerless and people should not feel powerless when relating to my designs” • “design itself does not have to be grand, but the message should be” • “mixing joys and sorrow to keep life feeling both real and possible” Partnering activities in a lecture course with the students’ own studio work provides an opportunity for reflection that may not happen in studio, gives them reference outside precedent studies, reminds them of the humanity of design, provides contrast and thus context given current societal conditions, and illuminates Stumpf’s (1998) manifest that “...designers traffic in the saving graces at the heart of civility” (p. 5). References Professional Standards 2018. (2018). Retrieved from <https://accredit-id.org/> Stumpf, W. (1998). *The Ice Palace that Melted Away: Restoring Civility and Other Lost Virtues to Everyday Life*. NY: Pantheon

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Community Engagement and Interior Design: Rehabilitation of the Warrior Hotel, Designed to Laud A City's Amerind Heritage Via the Stylistic Genre of Art Deco

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Abstract

The Warrior Hotel, located in Sioux City, Iowa, is a ten-story building designed by Alonzo Gentry, a Kansas City architect. It opened in 1930, coinciding with the onset of the Great Depression. The hotel's name and ornament paid homage to the city's native American heritage, while its design conveyed this association through the stylistic form language of Art-Deco (Putz 1985). The façade exhibits characteristic step backs that recall the ziggurat forms of Meso-American Aztec and Mayan temples, while the interiors, finished in imported marble, cylinder-shaped chandeliers, and elaborate paint schemes, reflect the period interiors of Viennese architect Joseph Urban and his work in New York (Midwest Hotel Reporter 1930, 11). The building is a local landmark and listed on National Register of Historic Places, yet it has remained vacant for nearly forty years. Hence, the pedagogical issue examined in this study was how an interiors class, comprised of upper level undergraduates and graduate students, could collaborate with local business owners, state government, and community members to develop rehabilitation plans for the building's interiors. The pedagogical framework of the class embraced a systematic design process that integrated students with diverse collaborators to 1) research and analyze of the property, including its history, precedents (stylistic), and condition, 2) study and interpret contemporary demographics and growth trends in the city, and 3) develop suitable rehabilitation plans for the Warrior Hotel's interiors based on national standards. The instructional approach utilized mixed-methods research and design processes that amalgamated data from interviews, videography and photography, archival analysis (written and photographic), onsite material cultural analysis, and national preservation standards (Creswell 2018, Prown 1982, NPS 2018). Project

collaborators included the Warrior Hotel owner and representative, State Historic Preservation Office (SHPO), State Historical Society, Iowa Economic Development Authority, Sioux City Museum, Sioux City Public Library, Woodbury County Courthouse, State Steel, Orpheum Theatre, and the Goosman Law Firm. Deliverables required a historic structures report, renderings of rehabilitation plans, and a public presentation. Student outcomes included credible historic research and contemporary trends analyses that facilitated realistic rehabilitation concepts for key spaces and that adhered to established national standards in preservation. Students were also able to generate creative reinterpretations of period themes and motifs that are no longer extant. In addition, the research approach educated students on a distinct evidenced-based process for interior designers that is essential to understand for rehabilitation and restoration projects. Further, it generated interest in the interior designer's role in preservation-related projects and led to several independent studies on community rehabilitation the following semester and an accepted internship for an interior design student at the SHPO. These opportunities led to the students being hired by top firms in the state that engage in significant preservation projects. This study's information advances interior design pedagogy by (1) conveying the breadth and relevance of the field of Interior Design to public citizens, who are also the constituents of the legislators that set budgets for state-supported institutions of higher education, (2) expanding engaged research opportunities for interior design students, (3) educating students on the relevancy and value cultural heritage and preservation projects, and (4) providing students with a competitive edge in their job search by introducing them to preservation standards in interior design coursework, a topic that is infrequently taught. Collectively, the instructional methods and type of project renders interior design history relevant to contemporary contexts and problems.

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Fostering Community through Cross-class Curricular and Co-curricular Interactivity

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Abstract

Social networking, texting, and a “can do” attitude toward technology characterize students entering college today. Children born in the new millennium have known relative peace and prosperity around the world until the more recent emergence of global conflict and terrorism (Howe & Strauss, 2000; Howe & Strauss, 2003). Embracing both diversity and equality, the confident and “me” centered Millennial maintains a startlingly individualistic attitude in the physical realm but readily join others through social media platforms. Challenging the status quo and those in authority these “digital natives” value rich, interpersonal experiences, and handmade objects despite deep experiences with pervasive technology (Prensky, 2001). Tightly scheduled and encouraged to participate in abundant scholastic and extracurricular activities, they are both competent and chronic multi-taskers, attended by hovering, helicopter parents (Seppanen & Gualtieri, 2012). Their short attention spans, in part fed by the ubiquitous handheld device on their person, they learned in the era of “no child left behind” and often lack critical thinking, writing, and other skills valued by faculty from older generations. In adopting and adapting signature pedagogies that address the orientations and needs of current student, educators must harness not only online approaches to learning but, as revealed in this presentation on design practice and process, a strategy for reaching digital natives by developing community. As a pathway to curricular enhancement, program faculty collaborated with university partners to learn what might be required OUTSIDE the curriculum to best synthesize course information and put it into practice. The faculty undertook workshops to leverage institutional resources and developed explicit learning outcomes to shape both the curriculum and co-curricular efforts, such as student success, belonging, and retention, and graduate rates. With this assistance, the faculty the co-curriculum as the faculty

retooled and updated the curriculum. With these pedagogical changes, faculty structured explicit co-curricular offerings – community days, service opportunities, sharing sessions, and workshops – to frame the importance of learning through community. As a faculty, we know these co-curricular moments enrich classroom, studio, and seminar learning, especially when students connect to local and global communities as students explore ideas. In this presentation, I will share the co-curricular strategies adopted by the faculty, some of the successes and challenges inherent in the model, and the outcomes affecting students and faculty through a review of surveys gathered over a three-year period. In reflecting on and sharing this information, I hope to foster a conversation among session attendees to amass additional ideas and best practices that can be explored.

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DESIGN FOR DIGNITY AND EMPATHY: ROLE + PEDAGOGY + REFLECTION

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Abstract

Introduction Autism Spectrum Disorder (ASD) and Autism are both general terms for a group of complex conditions of brain development. These conditions are characterized, in varying degrees, by difficulties in social interaction, verbal and nonverbal communication and repetitive behaviors. It is imperative for Interior Designers to empathize and understand how the constructed interiors can affect children with autism to increase their chances of being successful in the environment. This presentation describes a pedagogical approach that was employed to help students explore users' experience, research, and develop design solutions for the clinic for children with autism in the interior design studio. This project also bridges the gap between theory and practice by providing students design experiences in authentic settings. The Project and Process The instructors introduced the renovation of the clinic for children with autism as a seven-week studio project with an overarching learning goal that the project will increase students' sensitivity to and empathy for challenges and issues related to ASD. In order to provide the most fitting design solution for the first-floor level of the 10,000 square-foot clinic, students worked in teams to understand ASD, the client and the diverse users of the clinic (children with Autism, their caregivers and the care providers). The design firm involved in this experience, provided the students the programmatic requirements and the existing drawings of the space. The design strategies and programmatic concepts for inclusive design to be considered were: flexibility, sociofugal and sociopetal zoning both in public and private space to accommodate various needs, acoustics, sensory stimulus zoning (high and low), color and light. During first two weeks, students researched and familiarized themselves with the project. They visited the existing facility to understand the role of the built

environment in supporting the education and learning experiences of children with autism. Students debriefing and reflection after the visit uncovered additional information about the project. Next, students reviewed journal articles on ASD and chapters from reference book. Students reflected on the readings in small groups and were presented a lecture on designing spaces for children with ASD. In week three, students immersed themselves more into research on ASD, this typology, understanding the users, their needs and constraints. They then presented conceptual and schematic solutions to the client and designers from the firm. After receiving feedback from them the students refined and developed their designs and presented their finalized design solutions to the client, firm collaborators, peers and instructors in this seven-week immersive studio project. Conclusion The client, firm collaborators, and instructors were pleased by the richness of the learning experience and the depth of the students' investigation and research on ASD, and how the research informed their design proposals. In their reflection exercises, students reported an understanding of the role of the built environment in supporting the learning experience of children with autism positively. In terms of academic benefits, each stage of the project provided students with new skills and understanding of the problem and design process. This project offered students both a real setting, as well as users and design criteria to work with. It also provided students an opportunity to define the problem and project goals based on observable environmental variables, user input, and research. Overall, the experience increased students' sensitivity and empathy to challenges and issues in the community, as well as bridging the gap between theory and practice through a design experience in an authentic real-life setting.

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Designing Hope: A process oriented design build studio

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Abstract

As academics and scholars, we have the responsibility to create new pedagogical approaches that advances the profession and exposes students to the expanded field of the profession to benefit those in the periphery. In Spring 2018, faculty and senior students in Interior Design partnered with Kids at Hope, an organization that shifts the term “at risk” that tends to stereotype and devalue youth, by the term “at hope”. Kids at Hope believes, states and demonstrates that all children are capable of success, no exceptions (Carlos and Miller 2007). Seven senior students in Interior Design and seventy students from a local Title I high school, explored together the meaning of hope. The studio project, designing hope, was set as a design build pedagogy that addressed the learning outcomes already identified in the literature, including: enhanced collaborative skills, and exploration of new methods of project delivery (Canizaro 2012), stronger link with material experimentation and construction (Wallis, 2007; Borden and Meredith 2012), and experience in all phases of design (Better et al, 2002). Besides these object oriented learning outcomes of spatial fabrication, designing hope revealed a new set of learning outcomes that focused in the process rather than the object. Every design is a hypothesis and a practical experiment. By its very nature, design aims at solving problems by intervening in a particular way (Haddad 2014). The senior students participating in this funded studio, collaboratively designed and fabricated a kit of parts that reflects on the meaning of hope for students at Hope College and Career Readiness Academy and proposed a process with a series of events to be carried out annually by the high school students. Designing hope proposes a two folded challenge: (1) how to involve a vulnerable population in a design process, and (2) how a design build studio in interior design can empower

students beyond the boundaries of the profession to become agents of change in their community. This study presents the lessons learned on a participatory collaboration design- build and process-plan from the perspectives of the faculty and students participating in the studio.

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A Dose of Reality: A Capstone Project Framework Inclusive of Millennials, CIDA Standards, and the Profession

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Abstract

Motivation Many undergraduate programs provide a capstone or thesis project in the last year of an interior design students' educational experience. The open-ended nature of a thesis year and amount of research required, challenge both student and educator. Significant responsibility is placed on instructors to make sure student work exhibits an extensive amount of Council for Interior Design Accreditation (CIDA) Standards. Millennial students bring unique challenges to the classroom, but if they are engaged, they will exceed expectations (Meister, 2010). However, a thesis structure can cause students to feel frustrated, isolated, paralyzed, or anxious because they may have become too reliant upon the instructor. As stated by Kirstie McAllum, (2016), "We have created a system that simply replaces helicopter parents with helicopter professors." These outcomes are counterproductive to the learning educators are trying to incite. **Problem** Providing opportunities for students that simulate workplace challenges such as time management, working with clients, setting and maintaining deadlines, being self-reliant, independent thinking, and multi-tasking are a vital part of interior design pedagogy. How can we as educators increase confidence in these areas, maintain the expected level of outcomes, and provide students with the skills necessary to enter the profession? For Millennials, the thesis is a problematic model as the stakes are high and everything rests on one project (Rickes, 2009). If the student becomes disenchanted or lacks connection to a project, there is too much invested in altering the path. A thesis can depict success as a potential graduate student. However, having one final project in a portfolio can be problematic in the professional world. **Method** In the revised framework, each student is required to complete eight projects. The complexity and outcomes of each project are

discussed individually with the instructors to determine scale. Students are given a list of project types and action items and tasked with selecting a variety of projects that best suit their professional goals. The action items are a culmination of required coursework by the instructors, CIDA Standards, and experience from the professional world. Training days help students understand action items and instructor expectations. Questionnaires are provided to improve documentation vital to the CIDA Standards, research writing, and technical information. The students make a schedule of deadlines, which includes critiques with instructors for both semesters. Projects must overlap to give each project sufficient time. The resulting work culminates in a final exhibition, bound thesis book and an undergraduate research poster presentation. Results Professionals reviewed the structure and subsequent work and responded to the way it parallels their professional work life. Evan Cindrich, Principal Architect commented, "I must say that I am very impressed that each student has been able to complete so much work in one year. I think a major strength is that each student could direct themselves and work on project types that interested them. I love to see the variety. I also like to see they are getting experience in most aspects of projects. This is good real-world preparation." Reflections The action items will be considered each year to stay current with the interior design industry and CIDA standards. Improvements have been made based on feedback provided by students and professionals. A survey taken by the graduating students revealed that a majority felt they improved most in the following areas: Independent thinking, time management, self-reliance, being a self-starter, and handling uncertainty. Students were asked to provide advice to the students and the instructors, which has influenced changes for this year. Many recent graduates have let us know the skills they learned have proved valuable to their new jobs.

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A step-by-step critical thinking decision tool for these complex times

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Abstract

There are complex decisions about interior design that await our students in today's quickly changing landscape. Questions like the use of technology, relationships with other design fields, and fundamental values can be more complex than meets the eye. For example, user-centered design actually has drawbacks (Spillers, 2014). Artificial intelligence is now capable of generating space plan options, but may actually help design practitioners, not threaten them (Villaggi & Nagy, 2018). Tomorrow's decisions will demand holistic decision approaches that apply both cognitive reasoning and empathy to effectively confront complex questions (Moore, 2001). The current cultural zeitgeist is notable for its snap decision-making where it is easy to assume the worst in one's 'opponents', questioning their intent or even their humanity. In the midst of this, the new generation of interior designers will be challenged to work holistically with others, situate the profession in a dynamic marketplace, and attend to clients whose issues we cannot yet fathom. The need is great for an effective way to make decisions shaped by thoughtful, informed strategy. Critical thinking tactics seek to grasp the entirety of an issue, empathize with opposing viewpoints, and reach a measured decision free of distorted, uninformed or egocentric thinking. Effective strategies intertwine the cognitive and affective to shape conclusions about society, one's discipline, and oneself (Moore, 2001). Specifically, a student needs to progress from black/white stances (dualism) to the multiplicity of acknowledging uncertainty, and ultimately see themselves as active makers of meaning through informed perspective (Perry Network, 2014). I believe it is imperative that we equip our students with such strategies to prepare them for their careers. A hands-on one-hour class discussion exercise introduces students to a practical strategy for engaging in effective critical thinking on a design issue. In this exercise that serves as part of a graduate seminar class on current issues, students begin by reading a published article that lays out the case for the eradication of interior

design licensing. Students are then guided through five steps (derived from Smart & Delohery, 2007) that help them identify and deconstruct the article's points, empathize with the author's perspective, and delve deeply into the logic and implications of the presented argument: 1. Prioritization- determine the key points of what the author is saying 2. Translation- write the essence of the argument in your own words 3. Identify assumptions—what is not said, but assumed? 4. Points of agreement—whether or not you agree, what parts of the argument ring true? 5. Analogy—describe a similar situation that builds empathy for the opposing view The class completes the exercise individually with discussion along the way, then students are asked to write their decision with points that defend their view. Class discussion prompts students to hone their reasoning. My observations were that students perceive the process of this exercise as much slower than their usual method of reaching decisions. However, that is the point of the process—that thoughtful consideration will take effort, discovery, and reflection. I was pleased that students derived points from the author's view with which they both agreed (there are left-brain and right-brain-oriented designers that make a single licensing exam problematic) and disagreed (he assumes that not everyone is capable of baseline knowledge and skill that the NCIDQ exam tests). At the conclusion of the discussion, I also shared the pro-licensing half of the published article with the students. I found the exercise not only served as a helpful icebreaker that got students talking, but also dispelled intimidation the idea of 'critical thinking' can engender, offering practical strategies that they might apply not only to their class papers, but also beyond.

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Believing is Seeing: Using Design as the Framework for Sketching Instruction with the Broad Curriculum Student

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Abstract

We have all seen a variety of wonderful sketches, drawings and watercolors depicting traveler's journeys through foreign lands and the cultures and events they experienced. Those drawings usually exhibit an accuracy and richness that express a feeling more than just a scene, as if the artist were part of the image rather than merely a passerby. Most of us wish we had the time and skill to go on one of those journeys and craft our own version of the adventure with the same lines, shapes and colors an artist displays. For students studying abroad, an international experience is typically recorded via cell phone or camera photographs and videos of the spaces and places they visit. More often than not, their photos are efforts to capture specific moments of that experience rather than document, in detail, the elements within the viewfinder that constitute the experience. Their images form tweets, chats, Instagram moments and Facebook posts. This isn't any different than most non-student tourists. But what if they were given the opportunity to sketch their travels, to replicate the aforementioned artist's version of a scene, even if they didn't possess the skill? This paper overviews the experience of a sketching class offered to broad curriculum (non-design majors) students based in an international location. The vast majority of the students taking the class had no formal training in sketching or drawing. Most had never attempted sketching other than doodling in the margins of their notebooks during a boring lecture. However, leaning on research indicating that "[t]he right sort of practice carried out over a sufficient period of time leads to improvement" (Ericsson & Poole, 2016, xxi), the instructor believed that with an appropriate type of instruction students could sketch at a level enabling them to capture more meaningful aspects of their study abroad experience. Since the course's focus was on sketching a student's travel experiences with design in mind, the instructional methods utilized certain

rules unique to technical design drawing: a horizon line, vanishing points, scale figures and line construction and variety. With these tools forming the basis of a somewhat formal framework to guide one's sketching, it was thought that a non-design student might be able to more accurately (in their mind) record a particular scene. An intended by-product of this method would be to demonstrate how design thinking combined with design-specific expression (technically accurate drawings) could add a layer of richness to their recollection and enjoyment of specific moments and memories. Additionally, sketching instruction emphasized deliberate practice, "effortful activities...designed to optimize improvement" (Ericsson, Krampe & Tesch-Romer, 1993, 363), as a core component of skills development and acquisition. The instruction stressed drawing production (quantity) on a regular basis governed by attention to drawing rules rather than drawing quality. Even with the limits of a short time window (two 3-hour classes per week for 6 weeks), it was hoped that quantity, supplemented by guided improvement, would eventually result in quality, and quality was to be defined by the students themselves. Supporting this goal is research indicating that "the maximal level of performance for individual in a given domain is not attained automatically as function of extended experience, but the level of performance can be increased even by highly experience individuals as a result of deliberate efforts to improve" (Ericsson, Krampe & Tesch-Romer, 1993, 366). Anecdotal evidence in the form of student sketches as well as observations by students themselves indicate that regular and deliberate practice utilizing a framework of design-specific guidelines did indeed improve sketching quality. Additionally, the resulting sketching experience was found to have had more of an impact on the memory and perceived experience of their study abroad travels.

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Biophilic Design for Interiors: Integrating Biophilia into the Design Process

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Abstract

This research explores the integration of biophilic design into interior design education as an integrated part of the design process. For the purposes of this research, biophilic design is the umbrella term under which biomimicry is included. The Biomimicry Institute has outlined three ways of integrating nature into design: form, process and system (<https://biomimicry.org/>). Looking to nature as a source of inspiration is not new to design. In fact, architects and designers have been doing this throughout history (Frank Lloyd Wright, Louis Sullivan, and countless others). What is new, is looking to nature for how to solve issues of creating human habitats. The relevance is that this takes sustainability to a new level making looking to nature a part of the entire design process. Tim Beatley, University of Virginia, has popularized Biophilic Design for its use in cities. The connection of nature to cities has been widely embraced by many municipalities. Biophilic Design for architecture has been outlined and promoted by Terrapin Bright Green. The Terrapin team has created invaluable resources for designers such as the 14 Principles of Biophilic Design connecting research to design decision-making. As the designers of spaces for people, interior designers are uniquely situated to contribute biophilic design. The WELL Building Standard, being widely adopted by the interiors community, includes some provisions for Biophilic Design. The paper presents ways of integrating Biophilic Design into interior design education. Over the course of the past six years, a stand alone course and several design projects have been developed to assist students in learning how to make biophilic design (and by extension biomimicry) an integral part of the design process. The projects presented include beginning with mimicking form, then processes and finally systems. Through regular first hand observations of nature, reading current journal articles on biomimetic design and project application, students are guided through a process that continues throughout their time in school and beyond. The way in which nature as a model is integrated allows

students to go beyond merely copying natural forms and results in meaningful design solutions that solve larger issues of human habitation, material and resource depletion and other issues of sustainability. The presentation will discuss various modes of instruction and will include project and assignment outlines, student work examples, and assessment tools for how to evaluate the success of each outcome. The projects include an assignment in adapting nature for pattern, an assignment for nature as inspiration for process and system and finally, the production of a personal biomimicry manual that the student can use for future designs including key readings and concepts as well as illustrated examples. Using weekly nature sketching as an ongoing assignment helps students become familiar with observing and documenting natural phenomena. For some this is the first time they have been immersed in natural observation. This process encourages curiosity as well as helps to bridge the integration of science (such as biology) into design thinking. The results of these projects and processes are unique, forward thinking and creative. Students are able to solve a range of design problems and challenges using this type of thinking. Being able to teach students how to solve big world problems is an extension of design education. The design process expanded in this way allows students to create meaningful work and make significant contributions to the world in which they live and design.

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Building Bridges to Interior Design Careers for Underrepresented K-12 Students

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Abstract

Current design practices and academia lack minority representation in the United States (Travis, 2018). For example, statistics show 50% of all black graduates of design programs in the United States come from seven American Historical Black Colleges and Universities (HBCU). Studies indicate that minority and underrepresented grades K through 12 students are seldom exposed to opportunities in interior design and unaware of career prospects in the profession (Otis, 2018). To this end, the Building Bridges to Interior Design Careers emerged out of the intention to create a dialog on diversity and design between grades K through 12 students, college level design students, college faculty, and design professionals. Since 2013, annual panels, workshops and summer camps have engaged diverse participants in design problem-solving exercises focused on cultural expressions in the built environment. Our activities have focused on the following four major goals for participants: (i) Understanding and exposure to the different career opportunities available in interior design. (ii) Experiencing hands-on design processes and activities in interior design, three-dimensional modeling and digital fabrication focused on the intersection between math and science. (iii) Collaboration with students, faculty and minority design professionals, and (iv) Understanding contributions of minorities and underrepresented designers to the built environment to create an inclusive design pedagogy. The program is structured to include after school design and making workshops, summer design and making camps, lectures and panel discussion. In the after school design and making workshop, grades K through 12 students are guided through interior design ideation, concept sketching, and modeling exercises. The

week-long summer design and making camp focuses on daily hands-on activities on interior design, three-dimensional modeling, fabrication and field trips to design firms. Lectures and panel discussion for grades 6 through 12 students focus on learning about global design history, multicultural design perspectives and diverse contributions to the built environment. Since 2013, the impact of the program has been assessed with pre- and post-surveys, participants engagement levels and tracking career paths of the participants (n=112). The themes that have emerged from the data collected include awareness of interior design thinking and making processes, interior design career exposure, design digital technology, design networking, teamwork and collaboration. Upon completion of the program, participants have reported increased knowledge of interior design and they have enrolled in design schools and internship programs in firms. Overall, the program has been successful in bringing diverse group of participants to the University campus. Our creative hands-on activities has exposed underrepresented students to design early to create a pipeline to increase diversity representation in the interior design profession. The program has created an inclusive design pedagogy through opportunities that help underrepresented children understand the historic contributions of minorities and underrepresented designers to the built environment. This presentation will highlight findings and lessons learned from the Building Bridges to Interior Design Careers program to serve as a model for other educators and audiences interested in creating diverse pipelines to the interior design profession.

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Changing the Game: Advancing Students' Research Skills to Prepare them for an EBD Future

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Abstract

Teaching Issue: In order to be prepared for an evidence-based design (EBD) future (Martin, 2014), students must be agents in their own learning, critical inquirers, able to apply higher order thinking skills to real-life problems, and able to make meaningful connections across disciplines (Mansilla, 2008). Teaching students how to read, interpret, and appropriately apply research to problem-solving and design thinking can be challenging. Student learners, today, have a tendency to move over information quickly and may not fully comprehend content or its application to problems or situation (Heinström, 2006; Mansilla, 2008). High impact practices (HIP) have been shown to enhance learning and create a deep level of content mastery (Kuh, et al., 2006). EBD thinking and problem solving is fundamental to creating human-centered spaces. Design students must have a proper framework for understanding how research is conducted and its applicability to the design process and the evaluation of design impact. This course and the assignments embedded within are designed to give students the opportunity to study a human-environment centered topic and develop deep knowledge self-directed manner. The relevance of this approach is that a comprehensive interior design education should include skills in obtaining EBD information to inform design thinking and further students' ability to consider research that can inform the body of knowledge (Guerin & Thompson, 2004). Instructional Methods: This advanced-level course uses three HIPs to increase information literacy and research skills needed for the application of EBD information; it is a writing intensive course, it engages students in undergraduate research, and includes learning through collaborative projects. Two assignments are integrated within the course to enhance student learning. The first is a research paper. Students select their own topics based on a set of user and place experience criteria. The process is broken down into a

series of benchmark deadlines including a first draft paper that is reviewed and evaluated by the instructor and then revised by the student. Students then submit a final manuscript and present their process, EBD findings, and suggested future research proposals in a formal oral and visual presentation. Topics are organized around themes and delivered at the end of the semester in a public symposium. The second assignment is team-based collaborative project, conducted early in the semester to demonstrate research skills in action. This project guides the students through a basic qualitative data collection process. This assignment requires that teams seek out and document targeted evidences. They must analyze their data and then summarize their findings in a written and visual report. Lectures and class discussions integrate knowledge of qualitative research methods and data collection tactics that the students can put into action with their own work. This systematic process of knowledge building is then put into context of other approaches to analyzing available research information associated with their chosen topic. Results: Student learning outcomes for research skills and critical thinking are assessed through change in percentage scores on the research paper. Results from papers since 2010 (N=172) demonstrate improvements in student performance on their overall paper submission by an average of 14.71% from the first draft to the final submission. Additionally, data from 2013 onward, demonstrates that when specific research criteria are isolated and compared, improvements for research skills and critical thinking averaged 33.21% (N=94). The significance of these results is the implication that creative integration of HIP are an effective strategy for increasing student mastery of the knowledge and skills they need to engage in research oriented inquiry to inform their design thinking and provide EBD rationale to their design approaches.

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Collaborative Learning: Integrate Traits as a First Step in Interdisciplinary Studios

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Abstract

Issue: Interdisciplinary learning is widely practiced to foster collaboration as a best practice for studio culture. When interdisciplinary education is applied to multiple dimensions of learning, research or design, teams encounter communication problems because they lack a common language (Guerin, 1991). Design educators found best practice studios employ a holistic approach for understanding factors that impact creativity, performance and satisfaction of outcomes (Chung & Meneely, 2012). Especially for upper-division courses, collaborative learning offers distinct advantages, and instructional methods and concepts (Campbell & Song, 2014). Yet, another study showed upper-division students had less favorable attitudes toward collaborative learning, suggesting future research to better understand teamwork experiences (Gale, Martin, D., Martin, K., & Duffey, 2014). While design educators continue to understand students' learning styles, teamwork training prior to beginning collaborative projects needs to be addressed regarding significant impact on success. Given this background, the presentation explores student collaborative learning and personality traits specifically catered to at the start. Method: A pilot study was conducted over the two consecutive spring semesters of an upper-level interdisciplinary design studio. Findings reflect interdisciplinary team building (Table 1-1 and 1-2) to access learning outcomes through collaboration. On the first day, students were directed to take an online survey and work preference inventory test. The survey comprised self-assessment in addition to course evaluation and preferences, and demographics (Table 2). Students' work preferences offered 8 sub-categories for delivery methods, assignment types and evaluation techniques. Students' perceptions related to design decisions and perceptions of students from other disciplines were analyzed (Table 3).

Student's life experiences and personality characteristics were examined. This furthered a goal of building multiple team work strategies through communication and collaboration. Finally, a work preference inventory was included testing 24 questions (Table 4). Using test scores, individual student's work styles determined four categories; focuser, relater, integrator or operator. Team Building Strategy: The survey's intent was to immediately reflect on individual team roles and voice concerns that are latent in students' minds. Very positive discussion resulted with students opening doors for students to consider leadership roles in groups and/or their ability to take leadership from others. They were able to reflect and communicate about their skills or lack of skills in areas and this helped instructors to form teams with balanced skill sets and leadership. It was also an opportunity for students to voice concerns and misconceptions about other fields. For example, many students were concerned that architecture students would assume the leadership role and would not respect the interior design students. Hearing these concerns allowed instructors to have an open dialog that ultimately helped students to enter projects with fresh mindset. Implication of Study: Students learned about themselves and how they fit into the interdisciplinary nature of environment. Based on peer evaluation of teamwork, communication between architecture and interior design offered challenging factors to quality of design input and presentation. Another challenge of teamwork was a difference in personality and preference related to nature of the group. As the team morphed, team member's level of responsibility and reliability received higher scores, reflecting higher level of participation and team dynamics. Efforts contributed by each member became positive recognizing the importance of teamwork. New insights from this pilot study suggests opportunities and advantages for using the teaching method, incorporating personality traits for integrative design.

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Course Material of the Materials Course

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Abstract

Fundamental to the design of interiors, materials represent the physical elements that not only construct a space, but also finish it. In the sentiments of Pedgley and Rognoli: “Painters paint with pigment; writers paint with words; designers paint with materials. A diverse palette, a mastery of words, and a comprehensive grasp of materials are, for each, tools of the trade – necessary professional skills” (2013). Selection of appropriate materials, however, is not limited to colors or patterns, but necessitates much more, like understanding the physics of perception and understanding of material properties as they relate to the health, safety, and welfare of an end user (Farrelly & Brown, 2012). Beyond the ‘technical’ selection and implementation of materials, the Council for Interior Design Qualification associates the thoughtful and creative selection of materials as integral to the definition and scope of “Interior Design” (2004). So, while the emphasis and importance of materials to design education and practice is evident, most interior design programs often only dedicate one course to instruction of the topic. In this limited time, a PROBLEM arises as faculty are challenged to introduce students to every material associated with interiors, from wood and stone to plastic and textiles, while providing significant exercises and assignments to help them retain pertinent information. Additionally, materials available to interior designers continuously change with technology and styles, causing manufacturers to regularly develop and discontinue product. The combined issues of necessary breadth and an ever-changing material landscape provides an impetus to strategically rethink the ways in which design educators provide students with foundational, yet poignant, knowledge of materials. Do we need to teach students how to estimate flooring and upholstery, or do we simply need to provide them with resources and a network of professionals that enable them to specify materials? Rather than reserving

material selection for the end of the design process and settling for digital images, defaulting to quick-ship items or, worse yet, finding samples at a local big-box store, design educators also need to teach students how to sift through online information and incorporate soft skills for thinking about materials. In response, this presentation will explore material education METHODS beyond a queue of manufacturer rep visits or costing and estimating exercises to create deeper learning as opposed to broad knowledge. Rather than a didactic approach, the experiments and lessons from two different material classes at two large universities reveal more active learning within a constructivist and experiential methodology, helping students understand applications and limitations of materials (King, 1933). As a pedagogical framework, faculty are liberated from cramming everything there is to know about flooring, ceilings, wallcovering and textiles, etc. into one semester by utilizing mixed modes of delivery, deliverables, and contexts to convey and connect information. Resulting OUTCOMES indicate that students realize the purpose of materials transcends mere aesthetics while gaining the ability to synthesize their significance to design process and practice. Students become versed in material understanding associated with laws and liabilities related to the health, safety and welfare of those who inhabit designed interior spaces. Just as important, students gain the ability to apply and discuss materials as concept and as key components of projects.

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Cultivating Biophilic Design in a Healthcare-focused Interior Design Studio

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Abstract

Biophilic principles are emerging as a pivotal theme in interior design practice and education. Research in this area has demonstrated measurable improvements in human health and wellbeing when the designed environment connects people to nature in a holistic fashion (Browning, Ryan, & Clancy, 2014). However, as the industry hastens to adopt this new design trend, there are significant concerns about gaps in the understanding of biophilic principles and what comprises a genuine biophilic design. The current study examined students' approaches to biophilia in a fourth-year healthcare interior design studio. The students were introduced to the principles of biophilic design and allowed to creatively apply those principles while solving a design problem. When developing the course and reviewing the students' work, the instructor was aware of previous research indicating that students often find it a challenge to integrate biophilia into practical designs. Often, the outcomes of these design efforts do not fully align with biophilic principles in an effective, authentic, and holistic manner (Hensley, 2015). To assist the students' research processes and enhance their ability to creatively integrate biophilic principles into their work, the instructor made use of integrative learning experiences. The students were asked to participate directly in immersive sensory experiences of nature, and to record, analyze, and share their reactions. The idea behind this approach is that it would help the students to develop a stronger experiential and conceptual model of biophilic principles, which would then be more intuitively available during their creative design work. For example, the students were introduced to the concept of biophilia through a small-group activity in which they were asked to physically present a natural object or element and discuss their reactions to it. Through processes such as this, they were encouraged to connect the concepts of biophilia that they were studying to their everyday embodied reality. The instructor also asked the students to undertake a process of "visual mapping" in which they associated

conceptual ideas about biophilia with specific mental images. In this approach, a student might intentionally link a concept such as “natural light” to a particular image of a building that he or she had visited (Ebbini & Ryan, 2017). This combination of immersive, sensual experience with design concepts was intended to help the students internalize and more actively process the course material. The students’ understanding and application of biophilic design was assessed within the context of a leading biophilia theorist, Stephen Kellert. The instructor used Kellert’s six elements of biophilic design to evaluate the success of student projects (environmental features; natural shapes and forms; natural patterns and processes; light and space; place-based relationships; and evolved human-nature relationships) (Kellert, 2008). Using a qualitative/interpretive research method, the author reviewed the 29 design projects produced in the course to see if the students were able to integrate biophilic principles effectively. The analysis of the course projects shows that they demonstrated a relatively high degree of holistic integration of biophilic principles, to an extent that is unusual at the undergraduate level. This analysis, along with student feedback, provides preliminary evidence that an integrative/immersive learning method can be very effective when teaching biophilic design. The implications of these findings for future research and design education are promising, as they show that specific techniques may help to improve students’ integration of biophilic principles into their creative work. Such powerful learning experiences can potentially lead to more successful biophilic designs in later professional practice, thus helping to forge stronger connections between nature, people, and the built environment.

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Developing an effective statement of philosophy slowly, carefully and authentically

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Abstract

Issue A statement describing a student's personal philosophy is an expected portfolio component and, in contrast to the portfolio's project explanations, is the singular element that addresses the student as a whole person, reflecting their beliefs and ideals about design. As evidenced by their own marketing literature, design firms value philosophy statements too, and see them as a means to communicate their values to clients. There is evidence that a student's knowledge of and ability to express their philosophy is potentially important to securing a job and ensuring a good 'fit' with a design firm. First, companies typically hire new talent who are aligned with their principles and support their company's business strategies, because doing so can help companies stay true to their principles (Ready, Hill, & Thomas, 2014). Second, design practitioners frequently identify professionalism and effective communication as criteria for new hires (Design Intelligence 2015). A recent survey also suggests that design students themselves value good company values 'fit' that philosophy self-awareness can help reveal: 'company culture' was cited the most frequently by interior design student respondents as the factor most important in selecting a company to start their career (IIDA/OFS Student Roundtable Survey, 2018). Given their broad objectives and the need for self-knowledge, philosophy statements are difficult to write well. In this author's experience, this is especially true for design students who are often more oriented toward graphic proficiency than textual expression. Instructional Method This presentation will share a graduate level project that supports the creation of effective, authentic philosophy statements suitable for inclusion in a graduating portfolio. The project's three-week duration has the effect of slowing down the writing and discovery process, which arguably allows more time for reflection and reiteration. The project's first phase applies a methodological strategy similar to the design process

drawn from multiple sources, compelling students to 1) gather precedent cases of aspirational firms' statements; 2) engage in an introspective exercise called the Mirror of Self Test from the book *Delight's Muse*; 3) acknowledge their perceptions and values through a series of guided questions by Diane Bender; and 4) write a statement first draft. In the second phase, the statement drafts are used in guided in-class peer sharing exercises derived from Vitruvius' Test of Fitness. Students exchange their drafts and examine the peer's statement through a three-part exercise to determine the statement's usefulness (clarity of meaning), fitness (avoiding ideas misconstrued by employers), and beautiful (evoking appropriate emotions through expression). Students then share their findings with their author peer. The project concludes with the instructor's review and editing of the statements. Outcomes

Several outcomes emerged through author longitudinal evaluation of the work and class discussion of the experience: 1) Compared to statements produced in previous years with a shorter project duration, the resulting statements exhibited an enhanced, more authentic expression of the students' values. 2) Emphasis on multiple external reviews brought comfort to the students who value peer sharing. 3) Despite the extended process, some students' written expression still did not improve markedly, prompting the author to guide them toward further assistance from the university's writing center. Most students have included the philosophy statements in their graduating portfolios. While it cannot be claimed that philosophy statement quality was a singular key to success, 90% of graduate students in the last three years of the department have secured design employment within six months of graduation with the assistance of their portfolios. The presentation will share student outcome exemplars.

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Drapes is a verb: Embracing the decorative elements of design through experiential learning

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Abstract

Definition of the problem: While the practice of interior design may have been defined, in its infancy, as the decoration of residential interiors, the profession has expanded to encompass much more than surface treatments. In the struggle to establish our position as a profession, certain decorative elements can take a backseat to technical knowledge in design education to ensure students are prepared for entry-level positions. Most spaces in the built environment contain one or more soft elements including upholstery, draperies, bedding, pillows, etc. yet even with the rich history of decoration and the impact of aesthetics in design, the process of soft goods selection and specification are often overlooked or minimalized in design education. The marginalization of our industry by society and media outlets such as HGTV should no longer be a deterrent for an educational focus on the transformative potential and aesthetic power of designing with soft goods. Recent data shows specifications skills are of rising importance to employers hiring entry-level designers (Gale, et. al, 2017). In a service industry such as design, time is money, and a familiarity with the process of specifying materials could yield tremendous cost-savings to employers. While materials courses routinely expose students to the process of specifying hard surfaces, soft goods are largely overlooked in materials specifications texts, or are explained with overly technical verbiage which can inhibit student learning. Many students today expect state of the art instructional techniques, resources, and materials, so the outdated and out-of-print materials dedicated to a more visual understanding the application of textiles to products fall short of enticing learners toward this content. Instructional techniques for addressing the issue: With a lack of published materials from which to teach this content effectively for today's learners, educators are left to write course material on their own with few accurate resources to rely upon. This project offers tools

and techniques for educating students on the process of designing with soft goods utilizing the principles of experiential learning theory (ELT). ELT suggests that students can generate a broad knowledge base through participatory learning experiences and reflective observation (Kolb, 1984). Demirbas and Demirkan (2007) acknowledge ELT as a tool for encouraging students to produce effective design solutions through experimentation, reflection, thinking and then doing. Suggested participatory learning opportunities designed specifically to enhance soft goods understanding include site visits to workrooms, trade shows, and fabric source rooms as well as material simulation exercises for and experimentation with bedding, drapery and upholstery products. Students must see, touch, and experience the products they are expected to accurately design. They must then translate their experiences into a series of annotated drawings, completed tear sheets and work order forms to accompany their studio projects to demonstrate an understanding of the content. Student learning outcomes: It is incumbent upon design educators to ensure students understand the history of our profession as well as the breadth of services design professionals can provide, to include soft goods and decorative elements. At the end of the course utilizing these techniques, students produced thorough design solutions which demonstrated product and process knowledge for soft goods design and specifications. Various employers seeking references for students who had participated in this course remarked specifically on their proficiency in soft goods specifications, further indicating a margin of success for this instructional technique. Empowering students with accurate knowledge and the ability to design and specify soft goods produces well-rounded new designers equipped to make significant contributions in entry-level positions.

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Enhancing and Utilizing Cultural and Global Perspective in interior Design Studio

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Abstract

Scholars have reviewed meanings of globalism and applications of multiculturalism in interior design curriculum (Asojo, 2013; Reicis, 2012). The professional standards of the Council for Interior Design Accreditation (CIDA) emphasized the significance of integrating cultural and global issues in interior design education in its discussion of the intent behind Standard 4.: “This standard ensures that graduates are prepared to work in a variety of contexts as well as across geographic, political, social, environmental, cultural, and economic conditions” (CIDA, 2017). In order to conduct these increasingly complicated as well as reflective expectations, new pedagogical solutions must be employed. To develop students’ utilize cultural and global perspectives in a studio content, an instructor designed a multi-spaces project, set in Seoul, to focused on integrating residential and commercial issues. Two different groups – a total of nineteen students - completed the same project over the course of two years. However, the second group was exposed to an additional method for discovering and engaging with the problems presented in the various project activities through their participation in multiple self-assessments. The larger pedagogical approach was the same for both groups. Using Fink’s Taxonomy of Significant Learning (2003) as a theoretical methodology, a framework for the multi-space design was developed with the following six phases: 1) foundational knowledge, 2) human dimension, 3) Integration, 4) application, 5) caring, 6) learning how to learn (see Figure 1). In the first phase, the instructor presented some core concepts of social, economic, cultural, ethical consideration, and sustainable issues to students. Students learned to use the international system of units and were tested by a metric system quiz. They were also taught Korean building codes and the concepts of universal design and barrier free design. For the human dimension phase, students were required to research two topics such as Korean tradition and living culture including architectural styles and brand’s identity of a

retail store. Students connected these specific ideas with their design process during the integration phase and summarized their ideas with questionnaires. Students made space planning, layouts, and furniture and lighting fixture selections for the application phase. On the caring phase, students presented their projects with reflection of their interests or values about global diversity. The final course survey is used at the learning how to learn phase. The survey questions are related with course learning objectives (see Figure 2). Both groups were required to submit weekly assignments to demonstrate their application of all requirements in the accreditation standards. However, although both groups also participated in a final phase survey that reflected on their overall understanding of concepts of global diversity, there was no collection of detailed data related to the first group's significant reflective learning over the course of the project. Therefore, for the second group, the reflective learning is evident in the student self-assessments surveys (see Figures 3) that were added after each of the project phases in order to solve this problem. The main goals of this self-assessment are to help the students apply knowledge they have learned and evaluate their performance. Students took 5 point scale survey. The participants rated 4.31 on average out of 5 for the self-assessments. The results of this combination of weekly assignments and corresponding self-assessments show how this combined pedagogical approach helped students facilitate their own reflection on course content in order to solve problems, understand the subjects, and use and apply the information effectively. The instructor is able to assess and revise effectively the course contents and student learning outcomes based on this study.

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From Slow Fashion to Slow Retail: A methodology for designing a sustainable retail culture

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Abstract

The future of retail is rapidly changing based on Millennials and GenZ's values and behaviors. These generations focus less on the product and more on the company's purpose towards environmental and social impact (MLSGroup, 2014). However, few retailers communicate their sustainable ideologies within their retail environment. If retail spaces are not designed to be more meaningful and educational places, these generations' sustainable values will remain disconnected from the physical retail experience. As educators, our pedagogical approach to retail design must address retail's environmental impact. As the fashion industry tackles this same issue, developing a methodology for shifting from "fast" to "slow", so too should retail design in order to create a more environmentally and socially sustainable consumer culture. This presentation will illustrate a pedagogical approach for translating slow fashion's methodology into a new "slow retail" design process that will support these generation's ethical behaviors. Slow fashion aims to educate consumers on responsible product sourcing and manufacturing while connecting them to their local and global community (Fletcher, 2008). As the retail store is the place that brings people and products together, the store is the physical platform to emotionally connect with people's ethics and link the customer journey to the product's lifecycle story. While we are all consumers, how we consume is just as important as what we consume, and where we consume is a part of how we consume, which extends into the design of the physical retail environment. Millennials and GenZ demand authentic and transparent retail storytelling to create a connection between their beliefs and the value they place on products (Davies, 2015). However, these goals are rarely established within current retail stores, creating a missed opportunity to educate and cultivate a community around a set of shared sustainable values. Proposing a process for transforming fashion's

products, systems, and practices, Fletcher and Grose (2011) demonstrate how to create this desired connection. Utilizing this framework as a guide to designing retail spaces, interior designers can begin to understand the elements required to strategically design a retail experience that is more “slow” than fast. Translating Fletcher’s framework into a pedagogical approach for an advanced retail design studio, this presentation demonstrates the tools created to guide students through a “slow retail” design process. Presenting a series of case studies, the instructor introduced the slow fashion framework in analyzing existing environmentally and socially sustainable retail stores. Students then conducted their own case studies in order to establish approaches for interior experiences that educate consumers and cultivate a connection. These case studies assess the elements within the retail environment which communicate the brand's core sustainable values to the consumer, addressing: Materials, Process, Customer Care, Localization, Biomimicry, and Engaged (Fletcher and Grose, 2011) (Figure 1). Using these learnings, students designed their own retail experiences for an online brand that aligned with their values, demonstrating innovative ways brands can utilize elements (physical, digital, and human) to connect to Millennials and GenZ’s sustainable ethics. Students then progressed through a modified retail design process based on the professor’s research and professional experience, specifically addressing environmental and social sustainability through: design research, brand strategy, and brand placemaking (figure 2 and 3). Exemplifying how students translated the “slow retail” principles and process, this presentation will showcase student outcomes which resulted in innovative programmatic development / journey touchpoints (Figure 4 and 5) and store designs including environmental graphics and storytelling elements (Figure 6).

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Historic Documentation Meets Technology

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Abstract

Design education provides an opportunity to expand curiosity and creativity with the introduction of new teaching methodologies. Learning environments should challenge our students with new experiences to enhance student learning outcomes. With this project, we introduced new technologies in a historic documentation course to assess the impact of 3D scanning on documentation procedures, testing the time and accuracy component in creating a HABS document set. This case study provides a detailed examination of the introduction of 3D scanning technology and its impact on the historical documentation process. The idea was to explore how 3D scanning technology could aid in the development of drawing sets following Historic American Buildings Survey (HABS) guidelines. Students explored multiple data capturing methodologies while recording and documenting a historic antebellum home producing a set of HABS measured drawings. The course provided students with a framework to develop problem-solving and critical thinking skills exploring methods of research and completing detailed design proposals through historical documentation. It also emphasizes individual and group problem-solving stressing the importance of collaborating as a team. Students completed five weeks of field site visits in which HABS guidelines for recording historical structures were used in the documentation process. In teams of two, students documented 45 different interior spaces with sketches, dimensions, photographs, and notes. Historically this course relied on hand work for the documentation of the site. Tools included; measuring tapes, calipers, profile gauges, telescoping measurement rods, phone cameras, graph paper, and pencils. This method of data collection was not only time consuming, but also opened the door for mistakes and miscommunication of the documentation of the building. Students would then translate the notes taken from field site visits into

CAD documents where both the exterior and interior drawing plates were compiled into one single set of HABS drawings. In week two of the site visits, we introduced the 3d scanner as a part of the documentation process. The main tool used was a small scanning camera that attached to an iPad. The structure sensor provided a 3D map of the students interior spaces. Students were required to complete tutorials and follow instructions on how to correctly scan the environment. The level of curiosity increased as the environments became virtual. Students became more engaged in the process of documentation. There was a sense of independence and agency in the information gathering process; more time was devoted to accuracy and detailed documentation of architectural design elements. This technology allowed students to have a physical connection to the environment they analyzed. The result was a much more in-depth analysis of the built environment understanding the relationship of the individual parts of the whole building envelope. It also enabled them to bring the space virtually back to the classroom providing an ongoing learning experience. The 3d scans were then translated to CAD and SketchUp saving them considerable time in replicating hand drawings and notes. The introduction of new technologies within the course provided not only the enhancement of student learning outcomes and experiential learning opportunities, but it also provided an opening for working with new community-based partners. The 3d scanning technology cuts down on time needed to document sites. One of the unexpected results was the scan itself. Holes were left, and sometimes the scans were incomplete. This incompleteness forced the students to go back to their measuring journals to fill in the missing information from the scan. It extended the opportunity for knowledge creation and application of design thinking skills.

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Incidental Learning: How Paper Cranes and Surgeon Examinations Enhance Design Education

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Abstract

A valued learning outcome in a fundamental design course is not necessarily the curriculum based elements and principles of design as topics, but learning to interpret, listen and follow instructions while understanding the value of and executing fine craftsmanship. These skills are developmental and benefit students throughout their design education and into their careers. Day one, in the freshman foundation design course, puts into practice a seemingly non-design-related in-class exercise. Students are given sheets of paper and then instructed, step by step, on how to fold origami paper cranes. Students are shown the procedure and given additional assistance as needed. Neatness and exactness of the folds are emphasized as students see how the process makes an impact on the quality of the outcome. Students must pay close attention then follow through. Some struggle with the process, making mistakes and omitting steps, reworking and repeating the process with emphasis on repetition improves skill. Lessons of craftsmanship and neatness are expressed in the process. No grade is associated with the finished origami birds. Additional outcomes include class bonding and learning to ask for help. Students exhibit less fear of failure and fear in asking for help associated with paper crane making than their typical design projects, setting a precedence for future projects. Students also express a sense of accomplishment in being able to create a three dimensional object from a flat sheet of paper. The origami activity was followed by a video of an unorthodox medical student examination for surgeon tryouts for the Kurashiki Central Hospital in Japan in 2016. The examination included folding 5mm origami cranes with tweezers, reassemble a beetle, and make sushi with one grain of rice. These challenges are unrelated to typical surgery exercises and their previous medical school training. Design students are intrigued by the video, the unique challenges, difficulty, and the participant's responses. A

class discussion relates, from the student's perspective, how these challenges are actually relevant to surgery skills. In particular students correlate the examination to surgery through working with small and delicate tissues, being precise, and working under intense pressure. The discussion continues on what can be learned from their origami activity and how these abstract concepts can be applied to their design education and projects. The use of a cross-discipline illustration bridges design, design thinking and medical sciences, showing process similarities and an interconnected pedagogy. While the learning outcomes of this activity are deliberately intended to reach beyond instruction on origami, the process for the student to achieve those outcomes is accomplished through incidental learning. Watkins and Marsick developed a theoretical framework for understanding informal and incidental learning, illustrating and defining with the following seven characteristics: based on learning from experience, embedded in the organizational context, oriented to a focus on action, governed by non-routine conditions, concerned with tacit dimensions that must be made explicit, delimited by the nature of the task, the way in which problems are framed, and the work capacity of the individual undertaking the task, and enhanced by proactivity, critical reflectivity and creativity. While their theory was derived for workplace organizations the incidental learning experiences are easily applied in an educational context as learning opportunities share a variety of settings. Through discussion students have their Ah-ha moment as they relate and connect the origami exercise and the surgeon tryouts video to their design education, projects, quality and craftsmanship. This presentation shows how an unlikely connection of seemingly unrelated activities lead to a holistic design discussion and an education beyond curriculum requirement checklists.

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Inside Out: theories and practices of interior design at work in exterior circumstances

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Abstract

Over recent years, it is not uncommon for interior design educators to encounter a number of students interested in the major or program on account of popular television shows or social media (White, 2009). However, rather than seeing this impetus as a disadvantage, interior design educators have the potential to correct misconceptions about the field and practice while also providing students with meaningful experiences that expand the notions of interior design. Countering the common perception that interior design can be characterized as mere aesthetic application of colors and textures in spaces defined by four walls, a floor, and a ceiling plane, various studio project examples, from revitalization of a community garden to rethinking a downtown pedestrian path, will be explored in this presentation to examine theories and practices of interior design at work in exterior circumstances. In line with the sentiments of Stanley Abercrombie (1977): “The earliest human environment, we are told, was a garden, and a garden is still a particularly inviting and provocative place...The student of interior design can learn from gardens, sometimes the indirect approach to a subject by way of reference and correspondence reveals something a more straightforward encounter does not” (pp. 2). Hence, by taking students outside the classroom and beyond the boundaries of traditional projects, their perceptions of the profession, their personal career trajectories, and the potential impacts they can have on broader communities are enhanced. Moreover, by investigating notions of “interiority” the presentation will reveal that students at any level of a design program can focus on “design” as a noun and verb (Lawson, 2005) through emphasis on human psychology, behavior, experience, and interaction. Within this methodology, the intent is not to over-constrain, but employ Resnik’s (2007) framework of imagine, create, play, share, reflect, and imagine, “to help everyone become more

creative in the ways they deal with everyday problems” (pp. 2). In this model, if students can reconnect with or mirror the creativity innate in a kindergarten classroom, this level of creative thinking can not only be applied to a specific project, but to other, potentially more traditional, interior design projects. Thus, the intent is to expand the way in which interior design educators understand, teach, and provide experience centered on “interiority” so students leave a classroom or a studio with transformative knowledge and a capacity to inform. What is more, this expanded horizon reveals a series of collaborators, including Landscape Architecture, Sustainable Agriculture, community partners and members, as well as city officials to enhance development of professional skills while creating unique projects to diversify portfolios and resumes. Rather than sitting in a classroom devoid of contact with the natural world, exploring both the ins and outs of environmental opportunities helps educators and students understand that the design of “interiors” as human experience and behavior does not necessarily occur bounded by four walls.

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Inviting Diversity: Influential Lessons From Designer Sheila Bridges

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Abstract

Motivation Teaching at a university located in a rural area creates specific challenges concerning interior design education. At institutions such as these, there is a great need for the students to experience economic, cultural, and cognitive diversity. As discussed in a sociological theory by Mark Granovetter (1973), individuals typically surround themselves with like-minded people who share a similar background, mindset, and values. The exchange of ideas remains homogenized as the perspectives are similar. However, socializing with a person that falls outside of ones' demographic can bring diversity, new ideas, and valuable insight. Diversity was the motivation behind inviting interior designer, Sheila Bridges to work with the students. Named "America's Best Interior Designer" by CNN and? Time? Magazine, Bridges is considered one of the most influential female interior designers in America (Sheila Bridges Design, 2018). Her passion for interiors inspired her to design furniture and home furnishings. One of her most influential designs, the Harlem Toile De Jouy wallcovering, is in the permanent collection at the Smithsonian Cooper-Hewitt National Design Museum. Method The visiting designer provides a project for students in the Residential Design Studio. A Computer Applications course focused on graphic design and presentation skills, supplements the project. The students designed a second residence for Ms. Bridges located in Hudson Valley, NY. She also requested that they design a custom wallcovering for the interior. The students developed research and precedents based on interviews with Bridges, her love of African artists such as Kara Walker, her design work, and personal homes in Harlem, New York, and Reykjavik, Iceland. They also read Bridges personal memoir, The Bald Mermaid. The project requirements were demanding, and the students had to work harder to design outside of their typical cultural and economic scope. The final design culminated in a proposed

magazine article for Elle Decor, a video presentation, and a full-scale print of a wallcovering. Extensive research provided visual and verbal content for the magazine, some of which resulted in a “Top Ten List” of Shelia’s favorite things. The content mentioned above was presented in an on-site critique with Bridges. The critique provided a valuable exchange of ideas and helped the students further understand Bridges perspective on their work. Following the student critiques, Shelia presented her work in a lecture to students, faculty, and the general public. The visiting designer program is part of an ongoing lecture series intended to bring diversity to the university. Results Incorporating diversity is more laborious than designing within ones’ typical realm, but it yields better results (Ellison and Wallace, 2014). Initially, the students struggled to identify the appropriate design aesthetic, but after designing several spaces, an understanding of the direction soon flowed. Students had to find appropriate and unique solutions that would appeal to Sheila, as she was the client. This required a thorough investigation into a prominent woman of color. They had to research Bridges residences to select art, accessories, and furniture that would be appealing to her. This required risk-taking and extensive research to make predictions that fell outside of their cultural norm. The students expressed how designing for someone from a different culture and economy was a challenging, yet positive learning experience. Reflections Inviting diversity in ideas, design, and cognition are an invaluable part of the educational experience. The opportunity to connect and work with a designer of such caliber who can teach the students differently is something all educators should strive to do. This experience is one we hope to replicate with other visiting designers.

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Positioning the Design Problem to Activate Transformational Potentials.

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Abstract

Identifying the Problem: “No one can deny three trends gathering momentum in the world today: accelerating change, intensifying complexity, and increasing interdependence.” Elder & Paul. Today, educating students to be highly skilled within disciplinary domains is not enough. No longer can good design be measured by its formal expression and integration of technical knowledge. Through responsible and informed methods, design solutions must challenge norms and take risks. The context within designers operate have rising expectations to address diversity within increasingly complex systems, alongside emerging social and spatial typologies. Providing learning experiences in which students position their creative pursuits and critical thinking in this dynamic context is essential. Emerging learning outcomes require educators to craft design problems that teach students to operate within broad and interconnected systems with curiosity, and the creative confidence to engage in immersive inquiry to discover and propose transformative solutions. How might one craft the interior design upper level studio to hone skills that prepare our students to engage in informed speculation? What type of design problems allow students to discover how to position the interior built environment as a relevant change agent to topics we face today and in the future? These questions led to the development of a new design studio framework. Method or Strategy Used: Analysis of learning outcomes in six consecutive studios resulted in the realization that student learning experiences were limited to a series of design problems using a project typology approach. In this type of studio, students are given a space, user group, and an equally prescriptive program of a particular project type. This

framework limits student's solutions to the re-application, or at best, slight modification to space typology standards. Research in design pedagogy and integration of critical thinking methods led to the development of a new third and fourth year studio framework that evolved the design problem from space types to circumstances. Rather than asking students to design a restaurant in an urban setting, for example; we would ask students to define and design an interior built environment to have positive impact on the relationship between food and the city. The approach positions the problem as a set of circumstances that challenge students to be agile-critical thinkers, immerse themselves into the context provided and engage in pro-active observation and design research. Students must synthesize their understanding into the identification of opportunities to situate the interior built environment as a catalyst of change with an informed point of view. From here, students creatively integrate multiple systems into meaningful spaces. Unlike the project-typology based model, which leads to the application of standards and a pre-determined set of parts that limit possibilities, this framework provides an infinite number of potential configurations or points of view. Analysis of Outcomes: When assessing the "Food & the City" studio*, the range of solutions provided evidence to the value and impact of circumstance-centered design problems. The overall studio framework had structured milestones, but the question allowed for flexibility and customization to frame the problem, and direct divergent inquiry. Proposals varied from an Urban Agricultural Research Center, Urban-scale Compost, to Hybrid Urban Workplace Market. Each solution was provocative in positioning new spatial situations, were aesthetically sound, met essential technical standards; but was immersed into testing new prototypes and programs connecting to meaningful systems outside of itself. Thoughtful consideration of the nature of questions we ask students to solve has had considerable impact on learning and the development of disciplinary identity as critical thinking leaders.

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Practice Makes Perfect (Almost): Affording Space to Build Collaborations

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Abstract

MOTIVATION Collaborations generate more information, stimulate creativity, improve retention, and inspire more satisfaction among students than individual work (Burke, 2011). In interior design, collaborative skills are mandated in Section II, Standard 5 of the 2016 Council for Interior Design Accreditation Professional Standards. **PROBLEM** Despite the importance of collaboration to interior design, educators and students are rarely trained in its best practices. Explicit scholarship about how to provide space within existing curricula to teach collaboration skills is noticeably absent in the interior design body of knowledge. A review of “The Journal of Interior Design” reveals numerous published articles about collaborative ventures but none about teaching students the skills necessary to collaborate more effectively. If, as Cohen, et al, observed, collaborative learning results during naturally occurring social interactions (1996), having this social foundation prior to the design opportunity—i.e., practicing collaboration before engaging in a project— should promote better collaborative dynamics. In previous upper-level studios exploring this topic, space for students to practice collaborating with each other in a low-risk environment prior to engaging with a more detailed design project was not afforded. Accordingly, team dynamics were expressed and formulated as the project evolved, leaving little time for corrections. **METHODS** For this iteration of the studio, students self-selected into groups and engaged in a two-week low-stakes entry point into collaborative best practices. Its goal was to afford students the space for a collaborative “dry run” prior to a more intensive design project. Because improvisational performance is dependent on collaboration, students first received a primer in improv principles, focusing on active listening, accepting offers, and building upon them. These activities were bolstered by readings and discussions of collaborative techniques ranging from listening to accountability practices. This practice then formed the basis for a series of two-dimensional collages

inspired by those principles (Fig. 1). Students individually evolved their abstractions into three-dimensional environments, which used a team-defined material palette (Fig. 2). The groups collectively assigned a scale to these assemblages, and collaborated to build new linkages, joining the three independent environments into one. After this team-building and collaboration practice, the groups engaged the 2017 IDEC Student Design Competition. RESULTS & REFLECTIONS During the two-week introduction to collaborative practices, one group exhibited an exclusive collaboration (Fig. 3), where partners worked individually and relied on others as advisors (Yee, et al, 2009). Three of the five groups were able to develop collaborations that evolved beyond the collection of parts typified by an exclusive collaboration; two of these groups also developed the IDEC projects that the department selected for submission to the competition. (Figs. 4 & 5). A fifth group experienced a catastrophic interpersonal failure. The three most successful collaborations involved groups in which the members were already close colleagues, supporting the hypothesis that teams with established strong ties might be able to apply and integrate collaborative practices more successfully. It may also explain the group failure. These students lacked any prior collegiality, suggesting that generating teams through self-selection may inherently disadvantage students who lack an extant social network within a given studio cohort. Instead of instructors reverting to an attitude of indifference to group dynamics—i.e., the tendency to leave it to the students to “work it out like adults”—perhaps a more active instructor role in the assembly of student teams may foster more constructive collaborative results.

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Sequential Use of Narrative and Theoretical Pedagogy: Pathway for Conceptual Design Thinking

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Abstract

In the appropriate sequence, students understand story before they understand theory. Preliminary narratives inform the application of principles resulting in the creation of design solutions. The utilization of the narrative varied sequentially across the foundations year. The heuristic process as applied throughout the foundations program created a means of coding and retrieving memories of visual information. The use of this process speeds up the finding of solutions because it provides mental shortcuts that facilitate conceptual design thinking. The narrative context was used as a vehicle to explore the application of the elements and principles of two and three-dimensional design. The fall semester was the introduction of the actual narrative, as a story-telling vehicle for introducing the elements and principles of design as a language of creative development for exploring creative solutions. A historical narrative was used to drive the design development. The students were required to look directly at the story line and to develop their design solutions as narrative modeled on the story line. The theoretical heuristic (second semester) application is contrasted to the representative narrative (first semester) heuristic application in establishing a consistent and sequential thematic curricular model for a foundations program in interior design. A heuristic model (as cognitive mapping) for innovative drawing and design solutions are the basis for practical visual conceptual applications. "...cognitive maps constructed from the knowledge store contain information concerning spatial relations and environmental attributive data which reside within a space-time context allowing the possessor to operate within an environment and to possess environmental and geographical data" (Kitchin, p.3). The conceptual framework advances a thematic approach to developing design thinking

for the foundations program in interior design. With this model, students are aided by a perception and discernment of the schemata of spatial knowledge that strengthens recall and learning of visual conceptual information. "Schemata are knowledge structures or sets of expectations based on past experience" (Brewer & Treyens, p. 208). Relations between manifestations of concepts within the production of the play "Hamilton" were examined. Parallel explorations of concepts from the play were explored in applications of drawing and design principles. Task orientation is an association serving as a road map to discovery of a different form of knowledge and is never identical to what it models but leads to new ideas. The transference of parallel concepts for innovative adaptations is therefore a heuristic model as it informs a roadmap (a theoretical roadmap from Hamilton) for creative drawing and design solutions. In the second semester, the interpretations of the narrative within the play were examined as visual models for drawing and design principles. These principles were then used for multiple applications as parallel to the applications from the narrative in Hamilton. The process is a memory encoding, such as the investigation of balcony levels in Hamilton that were then applied to an understanding of altering a station point, perspective points of view, and levels. Historical precedents in architecture and furniture were examined. Thus, the historical narrative became the foundation for visual applications that exemplified design principles. These design principles then were required to be applied to parallel applications in the second semester that were not directly specific to the story line. Concrete images exemplifying conceptual commonalities in the framework of the narrative were built upon for applications of design principles. In the sequential curriculum it is an entire process that is intended to be invoked. This process brings forward an examination of the expression(s) of the narrative as design and drawing solutions.

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Students consider design solutions to support stress relief and sensory engagement for adults with autism spectrum disorder (ASD).

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Abstract

Two years ago, researchers and faculty from the Rehabilitation Research and Training Center, and the Gerontology Department at our university, approached the Department of Interior Design with an interesting proposal to participate in a partnership between our programs and a community entity. The two university units had been discussing the quality of life of aging adults with disabilities. As we discussed ideas and opportunities we set forth with a goal to involve design students in developing ideas for spaces for adults with autism spectrum disorder (ASD). As we organized our ideas and received our grant we knew we had great chance to engage our design students in a project that could inform and inspire them on many different levels while at school, give them first hand experience with a real life client, and promote the importance of practicing the conception of human centered design solutions. The goal of the project was to essentially research and test ideas on a variety of spaces for adults with ASD while connecting our students to a local community adult care center for adults with a multitude of disabilities. Autism is a lifelong neurodevelopmental disorder that is known to lead to difficulties in social communication and interaction; however, the developmental trajectory as adults with autism age is not well understood. With the rise in recognition of the disorder, adult outcomes have become an increasing priority for this population. Through our partnership we began to develop a course of research that identifies best design practices supporting the needs of aging adults with autism, while optimizing their quality of life that includes client engagement, independence, and leisure skills. The development of such spaces would ultimately be reducing client stress and encouraging sensory engagement in the process.. The project focused on developing strategies for best practices when considering environments specifically for adults with ASD. Both graduate and undergraduate students

were asked to participate in this project over a two-year period. Their respective studio time allowed for visits to the center, engagement with the clients, research and understanding of the disorder, question and answer sessions with our other two university partners, and some teamwork. One of the groups designed interior spaces and provided a variety of spatial solutions, while the second group focused on the design of a singular piece of furniture that addressed specific sensory placement and storage. As this project continues, our funding has allowed for our team to produce a piece of furniture that incorporates a variety of ideas from the student projects. Our goal is to install the piece and test the affect on the clients and consider future additions and modifications as necessary. As academics our goals were to engage our students in community work and instill in them the process of designing for all.

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Systems Thinking Theoretical Model: Sustainability, Resilience, and Health/Wellness

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Abstract

Problem + Context: Teaching students the impact of design on the human experience is an ambitious enterprise for educators. The contemporary world presents an uncertain, complex context defined by climate change, global instability, economic inequality, health risks, and cultural tensions. How can educators develop teaching methods that foster a broad perspective of the system in which humanity exists? This presentation proposes a theoretical model that inspires faculty and students to apply systems thinking to critical issues that impact environment, people, and place. The model illustrates the intersection of sustainability, resilience, and well-being. Discussion will encourage educators to explore systems thinking in the context of interior design education. The fundamental tenet of systems theory is that a complex whole is comprised of interconnected and interacting parts (Senge, 1990). This theory emerged in the mid-20th c. as an alternative method for scientific discovery that resisted reducing an entity to individual parts (von Bertalanffy 1969). While others have advocated teaching interior design related to other disciplines, it may be more significant to teach students the place of interiors within even larger systems. Supporting this premise, Hassell and Benhamou (1988) suggest “although interior design must have a purpose with a theoretical base, it must also be part of a holistic system of people, the natural and built environment and artifacts.” **Method + Model:** Systems thinking is characterized by connectedness, relationships, and context and “requires several shifts in perspective, which lead in turn to different ways to teach... (Capra 2012).” Such shifts redirect thinking from parts to whole, objects to

relationships, objective knowledge to contextual knowledge, quantity to quality, structure to process, and contents to patterns (Capra 2012). For example, a shift from structure to process can mean “the ways in which they [students] make decisions are as important as the decisions (Capra 2012).” Supporting these shifts, our model illustrates a systems approach toward several of today’s critical issues and topics: sustainability, resilience, and the WELL Building Standard. It explores the intersection of their fundamental principles through analysis of relationships and patterns revealing a dynamic “systems roadmap” that can inform and advance pedagogy and lead to discovery. It is at this intersection where faculty can apply systems thinking to critical issues, student can begin to think in systems as their awareness of the impact of design decisions is magnified. Outcomes + Conclusion: This proposed model builds on previous course designs developed by the authors and focused solely on the broad issues of sustainability. They were designed to address not only the challenges humanity faces in an environment at risk, but also the challenge of effectively teaching very complex and impactful content to students. The most significant outcome was recognizing the need for an expanded and inclusive systems thinking theoretical model to encourage students to fully comprehend the impact of their design decisions and the place of interiors within larger systems. Assessment of student learning indicates this approach begins to change the way students tackle interior design problems, and strengthens their commitment to a positive and far-reaching impact on human well-being through the design. Educators have an opportunity to advance interior design education since “only teachers can provide insights that emerge from intensive, direct experience in the classroom itself (Rutherford 1990).” Such insights, supported by a systems thinking approach, can help educators meet the challenge of empowering students with new perspectives and habits of thinking to improve the future of human experience and well-being; a future that is hopeful, satisfying, and resilient.

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Teaching beyond ADA compliance: It's more than just wheelchair circles

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Abstract

Statement of the Problem/Context: According to the Centers for Diseases Control and Prevention, 22.5% of U.S. adults have some type of disability (2018). While people with disabilities constitute a large portion of society, often students are unfamiliar with this population and have little knowledge about their design-related needs. Historically, common teaching methods for addressing the needs of the population included teaching empathy through disability simulation activities (for example, having students navigate spaces in wheelchairs or on crutches), and teaching students about the Americans with Disabilities Act (ADA) standards, as emphasized in designing an ADA bathroom or adding a wheelchair circle radius. While necessary to teach ADA compliance, these teaching strategies fall short in two important areas: 1) the failure to include the viewpoints of individuals with lived experience with disability, and 2) going beyond ADA compliance to teach students to creatively address the needs of people from a universal design standpoint. Steinfeld and Maisel (2012) have suggested that interest in universal design is emerging due to three factors: 1) a consumer oriented culture on a global scale that puts greater value on personal development; 2) a rapidly aging population; and 3). economic forces and their pursuant implications. Increasingly, the need to incorporate the principles of universal design into design schools has been recognized, but preliminary findings of a study by Tauke et al. (2018) suggests that only a limited number of schools are actually doing so. Thus, the goal of this session is to present an interdisciplinary approach to teaching universal design within the classroom in order to prepare students to design an increasingly diverse world that accommodates all users. Instructional Methods: In 2017, a partnership was established between a college of design and a disability related research

institute to offer an interdisciplinary undergraduate certificate program in Universal Design. This presentation highlights two collaborative teaching efforts providing new avenues for teaching all students about the concepts of inclusive design. The integration of design thinking, various research techniques, diverse guest speakers, and the creation of a universally-designed product are just several of a variety of teaching methods utilized in the classes. The use of multiple teaching methods offers students a first-hand example of how information and knowledge can be acquired in a multitude of ways (see Colburn, 2010). Learning Outcomes: The students learned about a population of people who may have physical or cognitive disabilities, and how this relates to the broader perspective of universal design. Through observational techniques and interactions with people from this community, students learn empathy for the population for whom they are designing. Students also strengthen their problem solving skills through design thinking, resulting in solutions addressing the universal user. Finally, students further enhanced their ability to integrate the use of evidence-based design into their solutions. Taken as a whole, the courses offered encourage the students to consider the viewpoints of their clientele and focus on improving the quality of life for all of the users of their designed spaces.

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The currency of the storyboard as a design ideation and communication tool

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Abstract

Interior design students learn about spatial and human environment-behavior theory in their classes, but sometimes have difficulty identifying and applying it in studio projects. For educators, this also presents challenges in obtaining accreditation evidence of application-based learning. How do we persuade students to critically consider theory in their design process, beyond annotating their designed spaces (often after-the-fact)? Storyboarding is a useful tool for interior designers to ideate the user's engagement with space while moving through it. The storyboard is constructed by "exploration, analysis, conceptualization and communication tools" (Reeder, 2005), and highlights specific activities and encounters between humans, each other, and their environments. This method parallels how industrial designers anticipate a user's engagement with a product. Animators and filmmakers have long used the storyboard as a vehicle to visually describe the flow of a narrative from beginning to end. The frames of a storyboard define transitions between interactions, with each frame focusing on a specific event. Using storyboarding as a tool for ideation and identification can enable design students to emphasize human interfaces within a specific space and time, by deconstructing it in a series of events. Each frame encapsulates a singular episode and freezes that moment in time, enabling the design student to intentionally examine the occurrence in order to maximize its' efficacy by implementing design theory. The events of the experience can be 'design-engineered', frame-by-frame and moment-by-moment, as students understand the essence of each spatial experience and propose its' envisioned meaning. They use the storyboard with critical foresight, reflection and intention, and design to achieve functional spatial or behavioral goals, rather than designing primarily for aesthetics, or a first elusive impression. Storyboarding for interior design is a technique that scaffolds on the Basic Events of the Building Experience, by Roberto Rengal (2014). In studio, students are instructed to create six to nine

snapshots, according to Rengal's stages: • Approach • Overall Arrival • Waiting • Moving to the Destination • Arrival at Target Destination • Engaging in Target Activity • Side Trips and Secondary Activities • Departing the Destination and Moving toward the Exit • Final Departure Snapshots are a familiar storytelling scheme for the traditional student population (Snap-chat, Instagram, Facebook, Reddit, etc.,) and aligns with the need for rapid communication in an age of shrinking attention spans (Lucas & Rawlins, 2015). Humans have gathered around campfires since the Stone Age to hear stories, and this is a contemporary, visual equivalent. As the design student scrutinizes each stage for opportunities to enrich the user's experience, she attempts to engineer the moments by referencing spatial and human behavior theory, curating each event along the way, and generating ideas that add depth, purpose and intended experiential outcomes. In deconstructing space into stages, design students reflect upon and immediately apply spatial and human behavior theory as integral to their design solution. In-studio group discussions of the student interpretations and applications of theory in their design communication increasingly help them to redefine and clarify theory as it relates to the stages of the user's spatial experience. Not only does this technique provide evidence of learning, it expands the students' attitude to design beyond an aesthetic approach to a posture of human-centered experiential design. Student examples of visual storyboards will be shared with the audience, demonstrating the learning outcomes of this pedagogical approach. The technique is employed throughout the curriculum in sophomore to senior studios, using Bloom's Taxonomy to continually reinforce the importance of theoretical application in interior design.

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The future of biophilic design education: A concrete language for interior design students

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Abstract

Biophilia is a tactic given for meeting CIDA Standard 7 a, theories related to “the impact of the built environment on human experience, behavior, and performance”. The use of biophilia in design has a growing research base regarding connecting humans with other natural systems (Gillis & Gatersleben, 2015; Heerwagen, Judith & Hase, 2001; Kellert, 2008). While notably important, the use of biophilic design remains an elusive and ill-defined learning objective in interior design education. Biophilic interior design has been coined by the first author for the specific and unique needs that interior designers are experiencing when trying to include biophilia inside that mimics highly varied natural environments. Different from other fields, biophilic interior design aims to support the time spent inside and “away” from nature by offering nature-based, or biophilic, design (McGee & Marshall-Baker, 2015). The Biophilic Interior Design Matrix (BIDM) now offers a practitioner developed language with a concrete list of 54 features, called biophilic interior design attributes. This new terminology was recently used in a studio project and the students reported significantly higher perceived confidence and knowledge of biophilic design after having used the matrix during their design process compared to their peers who did not have the matrix. The open answer feedback in the post project survey also revealed they saw the matrix as a design tool and able to enhance their creativity and thoughtfulness. It also offers opportunities to connect evidence-based design with specific design attributes for research integration in the design process. Further validation of the tool by interior design educators can assist in further educating interior design students in creative and thoughtful application of biophilic interior design features that supports sustainable and even restorative planetary goals.

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The Learning Spaces Studio: Interdisciplinary Collaboration and Enduring Engagement

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Abstract

Problem The values of what we learn, how we learn, and what we need in order to learn are influenced by a changing time, one in which rote memorization and “silo” thinking limit our ability to find solutions to complex problems. While education methods are rapidly evolving, schools continue the design paradigm of the industrial revolution’s assembly line: rows of front-facing desks that encourage lecture-style information sharing. These fundamental problems in education design are central in the Learning Spaces Collaborate Studio. The course is predicated on the idea that innovative learning spaces should be designed with an approach that encourages design disciplines to collaborate, while engaging elementary school communities and education researchers in the process. (appendix A) The primary objective of this studio is to work in high functioning collaborative teams to research contemporary issues in K-6 education, and design schools that respond to these issues. Given the tremendous impact designers have on the function and spirit of space, our central question is: How can design create spaces that transform the learning environment? In addressing this question, students begin to see themselves as change agents for problems facing educational environments. **Methods** This course implements an interdisciplinary approach to collaboration, in which disciplinary insights are integrated in pursuit of more comprehensive perspectives. (1) The fourth-year studio is co-taught by a faculty member in interior design and an architect specializing in education. Teams of interior design and architecture students are established through skills surveys and learning-style assessments. Interviews with teachers, administrators, and curriculum directors give insight into pedagogical challenges, while faculty and graduate students from the College of Education share relevant research. The studio benefits immensely

from the input of all these stakeholders, allowing for innovative design solutions that respond to real problems and timely questions in education environments. School district partners have represented suburban, urban and rural environments. Place plays a crucial role as the studio explores how a school's setting and community culture impact the design of its learning spaces. Evidence-based research is used to inform design decisions by exploring topics such as individualized learning across multiple intelligences (2), project-based learning, learning through playing (appendix B), connections with nature and technology (appendix C), and disruptive innovations in pedagogy. (appendix D) Outcomes The design solutions from this studio do two things. First, they develop speculative spaces that support social engagement and individualized learning across multiple intelligences, while also proposing methods to engage neighboring communities. The work has reached a wide audience of design and education professionals invested in advancing education design standards, offering hypothetical case studies that expand thinking about curricular delivery and community interaction. The ongoing partnerships in the studio allow us to dive deep into the issue of education design; knowledge is carried from one semester to the next to further ideas previously addressed. We leverage the multitude of expertise a multidisciplinary architecture firm can provide, frequently interacting with the firm's designers, but also engaging the civil engineering and graphic communications departments, affording students opportunities to learn how to communicate with the diverse disciplines of the built environment. In a questionnaire distributed two months after graduation, students noted that the collaborative studio prepared them for working in multidisciplinary professional environments, gave them valuable experience in designing for specific clients, and evolved their perceptions of what is possible in learning environments.

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The THEORY tool box as a game changer in interior design education

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Abstract

What does ‘theory’ mean in interior design education? Does current interior design education sufficiently provide students with opportunities to be adequately equipped to contemplate the profession through multiple lenses and to speculate the future based on intellectual grounds? How can theory be taught to develop critical thinking skills to solve various contemporary issues, and build creative confidence to face challenges in an unknown future? Theory is a “system of ideas” or “a mental scheme of something” (Oxford dictionary, 2018) intended to explain the phenomena of activities. Theory is not only about framing the past but also is a set of lenses to observe the present and to envision the future. In order to enable students to be versatile in investigating the complex world and be critical about intrinsic human needs and aspirations, it is critical to educate students to be resourceful and to be skilled in making intellectual decisions. Moreover, the progressive transformation in the future of interior design, especially with the integration of technology, ushers the discipline to embrace multiplicity (Marinic, 2018), while preserving the core essence of the profession. This presentation will initiate discussion regarding theory teaching in interior design education and demonstrate a pedagogical framework applied to the current curriculum at an interior design program. The pedagogical framework of the theory course was developed around the following six premises: •Transformative archetypes theory: Reframing the conceptual foundation of design and culture based on an understanding of archetypes allow students not only to discover potential grounds upon which culture and identity can dynamically intervene but also to witness the core design archetypes that tie genuine global understanding to design. •History as a backbone: Understanding multiplicity and diversity of interior design introduced within the historical continuity will shape an evolutionary perspective in observing and analyzing design. History courses are offered prior to the theory course, and the discussions in

theory course refer back to history, thereby reinforcing the net structure of the students' knowledge.

- Expanded boundaries: The content of the theory must reflect the interdisciplinary nature of the contemporary world as the future problems will require reintegration of knowledge in new ways (Root-Bernstein, 2001). Related theories within and outside the design discipline are introduced to expand the boundaries.
- Overarching and multifaceted knowledge bank: The theory must cover the overarching principles that apply to interior design and the multiple distinct theories that fortify the uniqueness of individual design solutions. The course starts with lectures on a fundamental approach to analyzing spaces and buildings and introduces relevant theories, such as materiality and phenomenology, visual perception and illusion, spatiality, sensoriality, ornament, expression, culture, globalization and a new definition of identity, technological and humanistic, tension between sensitivity in trend and preservation challenge, and neuroscience and biophilia.
- Real world application: The course emphasizes the connection between theory and practice (Malnar & Vodvarka, 1992).
- Yielding curiosity and creativity: The ultimate goal of the theory course is for students to develop curiosity and creativity in solving contemporary design problems. The students are given real world problems to solve by applying the theories they learn from the discussion. Through discussions, activities, and projects, students expand their perspectives and build confidence to shape the innovative and dynamic future of interior design. The results from the survey conducted at the end of the semester demonstrates the positive value of the theory course offered to undergraduate students. In the presentation, examples of the theories and student projects will be introduced.

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Thinking with Our Hands: Re-examining the Role of Drawing in Design Curricula

Adrienne Wright, Visiting Assistant Professor, University of Central Oklahoma

Abstract

Thinking with Our Hands: Re-examining the Role of Drawing in Design Curricula Le Corbusier famously stated, “the tool is the direct and immediate expression of progress,” that affords “essential assistance and essential freedom,” and as designers, “we throw the out-of-date tool on the scrap heap.” (Le Corbusier, *Towards a New Architecture*, 1931). But is that sentiment really the case? By his standard, hand drawing in practice would have naturally faded into oblivion as computer technology increasingly permeated nearly every facet of the design process. Yet a debate continues to ensue among faculty as to the relevance of hand drawing in the profession and its most effective role as a part of interior design curricula (Lyn & Dulaney, 2009; Lyn & Dulaney, 2010). Classes devoted to learning hand drawing and digital techniques are typically organized in separate studios, perpetuating the student perception that the skill sets are mutually exclusive (Lyn & Dulaney, 2009). As students gain more experience using digital design software, they all but abandon drawing and the potential associated cognitive benefits related to exploration and problem solving (Schenk, 2014). Despite the prevalence of computer technology in the design industry, professionals continue to value the ability to sketch by hand, and consider it an essential component of production and professional development (Lyn & Dulaney, 2010). However, there is growing concern among practitioners that recent graduates are ceding too much creative control to digital design programs throughout the entirety of the design process and ultimately, their ability to ideate innovative solutions in the initial stages of the design process (Schenk, 2014). If design professionals continue to value hand drawing skills in the context of the conceptual design process, in what ways does the mutually exclusive arrangement in curricula impact student abilities? What exactly are they losing by abandoning hand drawing for the computer? This study examined the ways hand drawing is used in the conceptual design process and its potential impact on the strength of

final design solutions. Junior level interior design students were observed and interviewed throughout the duration of a large-scale hospitality project in order to gain insight into the ways they used hand drawing in their own design process, as well as ascertain their perceived importance of hand skills in the context of professional practice. While results did not indicate a direct correlation between engagement in the conceptual design process and the strength of final design solutions, student interview responses provided valuable insight as to the perceived importance of the design process as a whole and the potential role hand drawing plays in its execution. Student responses indicated an awareness of the cognitive benefits of hand drawing in their design process. Additionally, there appeared to be a disconnect as to the indispensable nature of ideation and what it means to actually design. Participants seemed to view drawing as a coveted technical skill, and did not feel comfortable sketching or drawing as a part of their own projects. In many instances, this lack of exploration diminished the strength of design concepts articulated via presentations at specific milestones in the overall project timeline. Despite the prevalence of computer programs, design professionals continue to value the ability to draw and sketch as a part of achieving project outcomes. When considering student perspectives of hand drawing, faculty have an opportunity to re-imagine its role in curricula as a communicative tool embodied in the design process in a way more indicative of professional practice, and better prepare students to for success as working designers.

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TRANSFORMABLE DESIGN AS A MEDIUM FOR REPRESENTING THE SPACE-TIME DYNAMICS

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Abstract

“We dwell in time as much as in space, and architecture mediates equally our relationship with this mysterious dimension, giving it its human measure”. Juhani Pallasmaa Since the emergence of “space-time continuum” theory (Giedon, 1940) in architecture stretches back to the beginning of the twentieth century, motion has long been part of the architectural repertoire of 20th and 21th century. However contemporary activities in Interior Design education are evidence of a lack of a holistic approach to the study of motion for comprehending and employing the dynamics of space and time. In most of Interior Design programs, the design of motion as an alternative mode of design thinking has not fully permeated into the existing curriculums. While most Interior Design programs have an ambiguous relationship with movement, their students, as designers of future building spaces, are trained to be less intolerant of the future and changes to their designs. Here, the main question is if Interior Design education can offer a core of transformable knowledge to aspiring future designers and if so, how this knowledge should be introduced such that it initiates a new kind of awareness about the spirit of place or “Genius Locii” to the extent that a new pedagogical circle and design practice is born. To this end, by acknowledging the presence of motion from a small scale to full scale, this paper aims to cast light on how a concept of motion can be oriented toward shaping a better environment and understand its quality. Utilizing movement is to reflect the fact that human beings possess a deeply rooted response to motion, recognizing innately in it a quality of “being alive” (Parkes, 2009). In this paper, the author articulates why “motion”, as the essence of all being, should be more prominent in Interior Design education. The author explains, as a pedagogical strategy, how the introduction of transformable design is critical to students’ ability to develop a greater level of conceptual rigor about space and expand their

ways of seeing and practicing interior design. By exploring the nature of time and sensing the environment created by motion, this paper discusses how motion design principles can be integrated early on in the design process. Drawing upon the author's own experience to teach several transformable design studios, this paper gives details of how a student's ability to harness valid motion design modalities and ascertain their relative values can be directly tied to her breadth of experience and knowledge about both static and dynamic forms to create a meaningful interior space. By establishing the notion of building-in-time (Trachtenberg, 2010), transformable design can chart a territory where motion can bring time into the architecture of space. By denoting a time-dependent set of architectural elements, Interior Design programs have the opportunity to educate designers beyond the boundaries of the static spatial conditions of the art of frozen music that tend to neglect or ignore temporality. At its foundation, transformable design is concerned with two domains associated with transformable boundaries, one physical and the other meta-physical. Both domains merge in the experience of the observer as the system transforms its appearance in response to changes in the ambient environment. The physical transformation relates to the movement of the system from open to closed in response to stimulation from the external environment. The second domain of inquiry for transformable architecture is the meta-physical that can evoke a perceptual response of the viewer. This perceptual response occupies the meta-physical space between the objects that moves and the cognitive processing of mental stimulation. From this perspective, the author argues how the understanding of this transformative boundary between the object and perception is key to the implementation of transformable design.

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Transformations in Design Education: Helping Students to Become Leaders in Sustainability

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Abstract

One of the most significant challenges for interior design educators is the need to keep pace with the rapid transformations taking place within today's industry. Sustainability and socially responsible design are important elements at the forefront of this change. The design environment is fundamentally different from what it was just a decade ago, and to be successful in their professional practices students will need to have the aptitude, confidence, and know-how to navigate the industry tectonics that are moving us inexorably in the direction of sustainable design (Coleman, 2015; Berens, 2017). From a pedagogical perspective, we as instructors are called upon to provide students with technical knowledge and vision, but also to promote their pragmatic understanding of the industry, its ethical considerations, and the social contexts they will encounter during their professional lives. To meet these challenges, I created an innovative summer course that emphasized the connections between interior design education and practice, with a focus on sustainable design. Students were exposed to "real-world" challenges and professional development opportunities in meetings with industry leaders. They learned about the design industry's business structures and incentives, and analyzed how those structures affect sustainability practices. The methods used in the course included weekly readings and summaries, combined with face-to-face discussions with design industry leaders. Students were exposed to the practice of design, and to challenging ethical and social considerations, through collaborative learning activities that connected them with top manufacturers, professional associations, design firms, and other global leaders in sustainability. The semester culminated in an organized field trip to NeoCon in Chicago, where the students were able to experience one of the design community's largest commercial exhibitions. The value in this approach is that it opens pathways for discussion among

design educators, design students, and industry leaders regarding the concept of sustainable design. In addition to offering professional networking opportunities, it allows students to see how design philosophies and ethics interface with the practical context of manufacturing and marketing design products. The students were graded based on their weekly written summaries, participation in class discussions, a final report on their experience of engaging with industry leaders, and a final analysis of a design product based on sustainability standards. At the conclusion of the course, the students completed an anonymous survey to obtain their impressions and feedback. The responses were mostly positive, with many students appreciating the link that the course sought to establish between design philosophies and practical career experience. The instructor evaluated the results of this survey for future course development and research. Overall, the firsthand experience that the students gained by interacting with industry leaders seemed to enhance their understanding of complex issues in the field, as evidenced in their written reports. This course demonstrated how advanced students' critical and analytical thought processes can be developed by exposing them to current professional issues and "learning by experience" (Kolb, 2015). It helped students to refine their understanding of ethical issues in the design field and to develop their capacities for multi-level thinking by connecting broad conceptual topics with actual industry practices (CIDA, 2017). It also demonstrated how the engagement with working professionals can profoundly inspire students and prompt them to consolidate their learning into a lifelong career trajectory. Design leadership in sustainability is essential and urgent in today's world; through this course students, educators, and professionals were able to make practical strides toward a healthier society and planet.

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Cold Call Binder Project: A Pedagogical Strategy for Affecting Professional Placement Outcomes

Cathy Nowicki, Assistant Professor of Interior Design, Highpoint University

Cathy Hillenbrand-Nowicki, Asst. Prof. of Interior Design & Visual Merchandising Design, High Point University

Abstract

Interior design practice is the “public face” of interior design education. Our graduates (new employees) infuse firms with cutting edge technology skills, fresh ideas, and unbridled enthusiasm that manifest a conduit of possibility for idea exchange and community engagement. CIDA standards mandate that design schools provide and maintain relationships with design practitioners to best inform design education and curriculum. Standard 1 parts e & f request evidence of interaction with a variety of stakeholders including employers, alumni, Advisory Boards and local design organizations assuring programs document and monitor the placement of graduates, and that data is used for planning, assessment, and improvement. Standard 6 “Business Practices and Professionalism” requires design students understand the principles and processes that define the profession and the value of interior design to society. This includes work with leadership models / mentors, collaborative opportunities, and understanding all aspects of design practice including vetting and hiring personnel to prepare them for design careers. Design education cannot positively affect the community through practice until students successfully secure employment in the field. As part of a multi-faceted teaching approach providing a contextual framework enforcing the learning-practice dynamic, a unique student project “Pick Me, Pick Me: The Cold Call Binder Project” was formulated to support CIDA Standards 1 and 6, and provide a pathway to employment via classroom learning and doing. Job prospecting techniques and procedures were adapted from successful career placement counselor methodologies for a Professional Practices course project. Students were asked to select 2 cities for future practice opportunities, and design firms within those cities for targeted placement assignments. Activities and results were recorded in a binder,

to be retained for use after graduation. This project provided seniors with valuable future career seeking / management skills, provided multiple practitioner interface opportunities using various business communication platforms, and instilled personal confidence and professional behaviors. Most importantly, many students using these techniques located and secured their first interior design job, changing their future, and that of their future community.

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Spring Break Remix: Exploratory Immersion through the Interior Design Externship

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Abstract

The 2018 CIDA (Council for Interior Design Accreditation) Standards identifies Business Practices and Professionalism as a core standard and expects design programs to provide exposure to career opportunities in the design profession. It further states that students should acquire an awareness of the contexts for interior design practice, the impact of a global market on design practice, the breadth and depth of interior design's impact and value, and the components of business practice. Experiential learning is a pedagogical methodology that has long been embraced by the field of design and can have positive emotions with work among other positive outcomes (Abe 2011). Over the past 20 years, there have been a number of studies that emphasize competencies needed by interior designers, including communication and business skills, which are often encouraged to be attained through internships, externships, and shadowing opportunities (Gale, Duffey, Park-Gates, & Peek, 2017; Harwood, 1995; Harwood; 1996). This presentation will discuss outcomes from a four-year research study that examined the effectiveness of a spring break externship program, which was initiated to offer greater exposure to the interior design profession. In comparison to internships, externships are typically held for a shorter period of time and offer an exploratory immersion ranging from shadowing to hands-on activities depending on the practitioner and academic agreement. The objectives for this particular externship program are to bridge the gap between formal education and professional practice and to offer cultural exposure in new cities over the course of the students' spring break. To better understand the effectiveness of this experience, qualitative and quantitative data were collected. Comparative survey data measured the effectiveness of this experience on both practitioners (N = 81) and students (N = 94). Over the course of four years, externs repeatedly expressed increased levels of personal confidence,

career preparation, and interest in their chosen field after the experience. Participating firms also reported high levels of satisfaction with their experience, and all firms reported that they would be interested in hosting a future extern. Student and practitioner feedback was additionally ascertained via the request to respond to open-ended questions. One student commented on the importance of the multidisciplinary nature of the experience stating, “The opportunity to shadow at an architecture firm made me realize I fit in with a larger and multidisciplinary company.” Another student stated, “This program allowed me to gain confidence in the direction I am going as a designer and how to pursue the areas I am interested in.” Practitioner responses additionally confirmed the importance of the program stating that, “More and more we are seeing that students have multiple internships at large firms and that stands out when we are looking at candidates to hire.” The development and delivery of the externship as a specific educational experience has yielded exceptional and transformative student learning outcomes. The primary goal of many college students today is to prepare for a career after graduation. Experiential learning, such as externships, offers students an opportunity to apply what they are learning within classroom to the real world and can help clarify their interests and determine future pathways.

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A Studio Experience of Integrating Adaptive Systems to Create Transformative Urban Public Spaces

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Abstract

Lack of social interaction and communication between citizens is a critical contemporary socio-economic issue. The excessive influence of technology has caused our communities and our interactions to become more private, isolated, and mostly virtual. The following abstract presents the product of a design-build studio which uses adaptive systems to generate creative solutions to social problems. Specifically, it will showcase the efforts of students working on a Parklet project, an urban social platform and a temporary sidewalk extension that provides more space and amenities for people using the street. This Parklet covers a parking space or loading zone to public use which results in further social connections, increase in public vibrancy, and support for local businesses. To move beyond schematic design, and offer students an experiment on real-world design issues, as a design-build endeavor, this studio provided a hands-on atmosphere of three-dimensional reality for collaborative and consensus design experience, Learning-by-doing, detailing challenges, and construction strategies. The studio sought to promote learning of new methods of design and construction grounded in computational design and digital fabrication. In a pedagogical framework, this studio encouraged student innovation and enhanced students' perception of design computation, mechanisms, and human behavior as they address critical contemporary and future social issues. The pedagogical framework was defined around various considerations, helping students overcome challenges in construction knowhow, construction management, structural/engineering specifications, city rules and regulations, budgeting, client interaction, material properties, and collaboration with students in other disciplines such as engineering and construction management. Methodology As a collaborative studio, 14 Junior undergraduate students were grouped in teams of two, participating in design charrettes, taking field

trips, and presentations of design solutions. Phase 1: Research Students were introduced to their clients, context, and available literature review to explore the potentials embedded in emergent technologies. They did research and precedent studies to explore the applications of flexible and multi-functional spaces and synthesized an outcome for designing transformable Parklet to serve local activities. Students used cutting-edge digital software for design development, analysis, and making a series of flexible and kinetic structures. Phase 2: Design Exploration Working in groups of two, students designed 7 transformable Parklets, in accordance with city regulations, existing businesses, and neighborhood needs. They designed multi-functional Parklets that will be used permanently and could be uninstalled and reinstalled when needed. In the end, jurors from the professional community selected one project to be built in full-scale. Phase 3: Design Development and Fabrication The whole class worked collaboratively to develop, document, prototype, and make the details ready for the fabrication of the full-scale project. Students submitted a design proposal to the city which was permitted, meeting all the required codes and regulations such as ADA, fire codes, etc. Since the project's site was in another city, students prefabricated the pieces in school and shipped and assembled at the site in one day. Students relied on parametric design to visualize and estimate the potential challenges of a project during the design stage. They used digital software simulators for analysis of the stresses and potential weaknesses of the structure in a given situation and took advantage of potentials embedded in digital fabrication tools and techniques to prefabricate their Parklet. The final result is a pleasant Human-Centered urban space that plays with light and colors and offers a delightful area for gathering and socializing while benefiting the neighborhood and local businesses.

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Can We Design For Everyone? Embedding Social Responsibility Into The Interior Design Studio

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Abstract

The idea of social responsibility is not new to the design-build environment, but, economic fluctuations in world markets has made it a growing concern for interior designers both locally and globally (Mangold, 2014; Zande, 2011). Competing in today's economy requires design educators to better prepare students to meet professional concerns that go beyond learning basic technical skills. Students need to have greater cultural competencies coupled with emotional intelligence to discern 'social diversity' from 'social discrimination' in order to provide for the needs of all users (IIDA HQ, 2016). The question is, Can we design for everyone? This phenomenological study presents two case studies focused on embedding sensitive and socially charged issues into an interior design curriculum. A variety of instructional methods were utilized including independent and group work, cooperative learning, and collective feedback analysis. Data came from classroom observation, social engagement, and analysis of artifacts. The findings can enhance design education by helping students develop socially conscious decision-making skills that promote professional and personal growth. The first case began with a design charrette involving students from the Arabian Gulf states and the U.S. An open-ended request, Imagine a future where design can alter the quality of life, challenged participants to improve the lives of the city's low-income, underprivileged migrant laborers. The students' innovative ideas caught the attention of one of the country's rulers who directed them to turn their ideas into practical solutions. Her encouragement sparked interior design students to generate: new ideas, research studies, proof of concepts, mock-ups, and innovative business plans which impacted how employers should house and treat their contract laborers. Case-study 2 involved critical thinking on the macro-to-microscale. A local business began to take large groups of men out of their walled labor camp for one day each week and

dumped them off at the Corniche beach area of a small town nearby. This became a great concern to the town's residents because of local customs segregating single men from women and families. The employer approached the author for fresh ideas which planted the seed for a new studio project. Students were told, "The idea of the project is not to make a judgment, but to come up with feasible alternatives to the current conditions for the low-income workers." Students investigated the problem from differing viewpoints and perspectives as they sought to find solutions which balanced the needs of the workers with the residents. The project ended with a public exhibition of impressive student work. Both case studies changed long-held beliefs and social attitudes for students and stakeholders alike. Lesson learned: Finding solutions which rectify a community's complex social problems may seem impossible. Providing a constructivist framework for infusing ethical problem solving and socially conscious decision-making created real possibilities for what seemed beyond the range of reason. Embedding social responsibility into design education can empower and expand a student's voice in society. However, acquiring appropriate skills requires new ways of teaching that surpass the expectations of a typical design problem. The author advocates that social justice and activism be more than a curricular afterthought. When generating lesson plans, instructors must promote learning opportunities that foster social responsibility. This means bringing contemporary social issues into the classroom so that students can design a future that fosters empathy, compassion, and dignity for the end-user whoever they may be. Keywords: design education, social responsibility, emotional intelligence, discrimination, empathy, contract workers

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CREATIVE SCHOLARSHIP

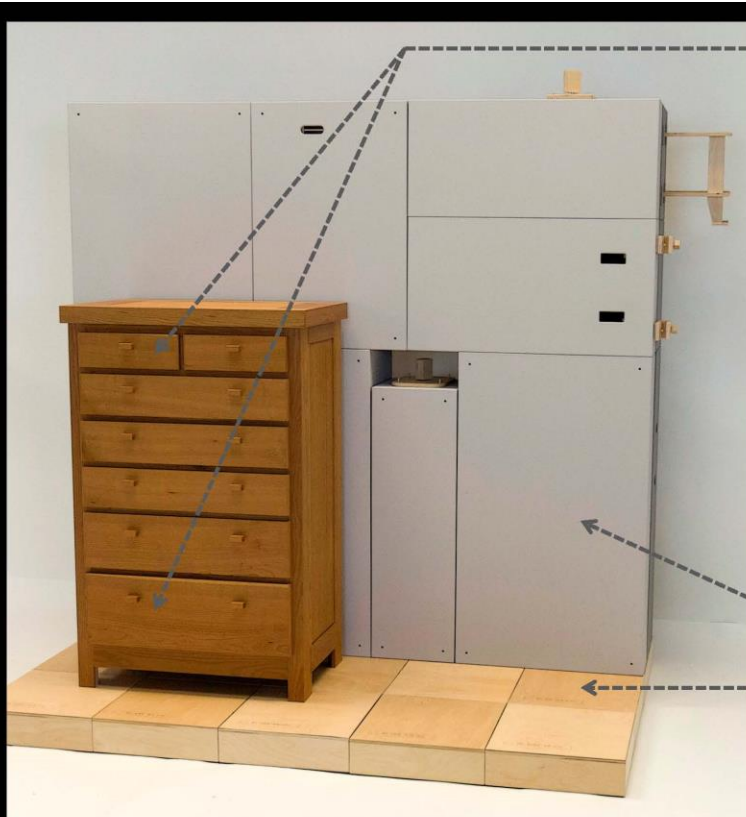
ROOM - Drawer #D1, and Drawer #D7 with Frame Base

Tad Gloeckler, Associate Professor of Art, University of Georgia

Abstract

Title: ROOM - Drawer #D1 - FUR - U.M. (FR), Drawer #D7 – STR - P.R. (FR) with Frame Base FB – PRNT - O.O. (FR) “ROOM”, presents a carefully choreographed deployment sequence that methodically disassembles an unassuming piece of furniture and the wall assembly and floor system that support it. Project components are manually manipulated and reassembled into a series of eight complex sculptural installations. Each installation features an intricate assemblage that references an eviscerated fragment of an endangered ocean organism. Title suffixes, like FUR – U.M. (FR) to Drawer #D1, and STR – P.R. (FR) to Drawer #D7, suggest a classification system intended to categorize a disfigured biological specimen. The primary component of “ROOM” is a cleanly crafted, chest high piece of wood furniture with seven drawers - a dresser. Dresser drawers and corresponding wall and floor components are extracted from the “ROOM” assembly at specific stages. Wall and floor components are maneuvered and recombined to serve as support systems that celebrate drawers and enable their elaborate transformations. A comprehensive “Instructions Manual” is integrated with each installation. “ROOM” challenges a viewer to reconsider their lifestyle. The dresser is symbol to private life and home, and a subtle suggestion of fashion and consumption. Transformation of a simple, compact system (unassuming dresser, modest wall, and basic flooring), to the crippled aesthetic of eight complex sprawling installations, is indication of environmental stress and suggestion of personal responsibility. Drawers feature three distinct layers that reference a corresponding ocean organism: textile/skin layer, structural/skeletal layer, and receptacle/flesh layer. Textile/skin layers include significant portions of cherry wood. As drawers are removed from dresser, a textile pattern appears first (reference back to dresser utility). Drawer contents are manually manipulated into a complex assemblage representing the

eviscerated fragment of an endangered aquatic organism. The referenced organism has a skin or enclosure that parallels the featured textile pattern. Recognizing the proposed association of textile pattern and organism skin establishes the fundamental stimulus for understanding project content: personal consumption promoting environmental stress. Other layers contribute to the fundamental premise identified above. The structural/skeletal layer is predominately light colored maple wood. Close observation of the referenced organism's skeletal system inspires and informs drawer design and construction. Receptacle/flesh layers feature more volumetric forms stained deep red or purple. The somber volumetric forms create storage compartments, while simultaneously indicating organism flesh. Storage is uniquely integrated within each drawer (dresser utility), but available space is compromised by the competing structural/skeletal and textile/skin layers, and the mechanical components that enable complete transformations. Each installation features display of an "Instructions Manual" that outlines deployment procedures and project content. A comprehensive Instructions Manual implies credibility and intent, but also persuades viewers to intellectually piece together a process that enabled the transformation of simple furniture into complex installation.



Drawer #D1 – FUR – U.M. (FR), and Drawer #D7-STR – P.R. (FR)

"ROOM", presents a carefully choreographed deployment sequence that methodically disassembles an unassuming piece of furniture, (*the Chest of Drawers*), and the Wall Assembly and Floor System that support it.

Drawers are removed from dresser at specific intervals and elaborately transform into complex sculptural assemblages referencing eviscerated fragments of endangered ocean organisms.

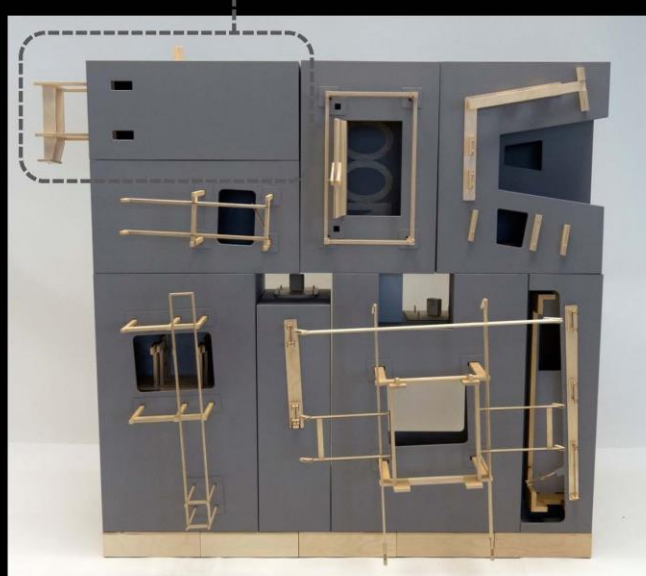
Wall Assembly (composed of stacked and nested pedestals), and Floor Grid System are systematically dismantled in sequence with each corresponding drawer.

Wall Assembly composed of stacked and nested pedestals that recombine to support and display specific drawers. The wall of pedestals is systematically dismantled in sequence with corresponding drawers.

Pedestal and stand for Drawer #D1 – FUR – U.M. (FR)

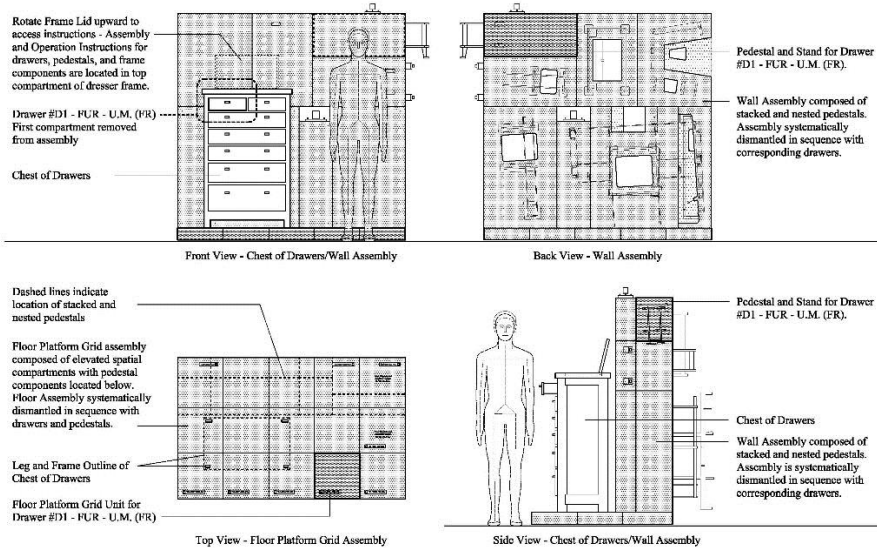


Front Side of Wall Assembly
(pedestals and stands)



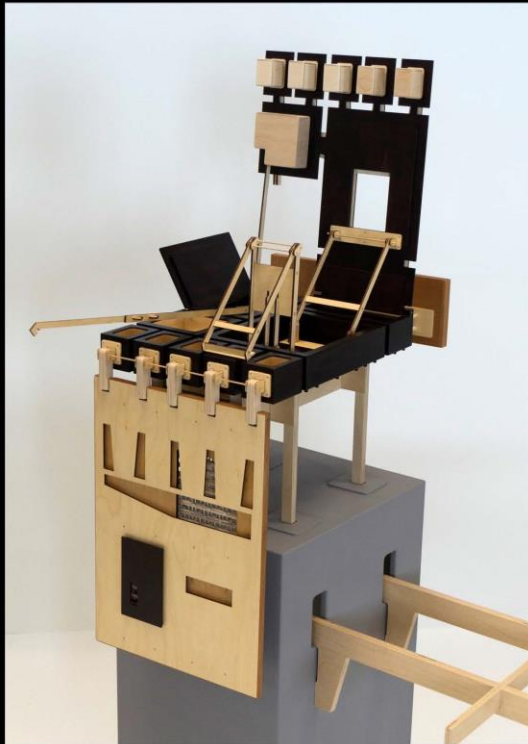
Rear Side of Wall Assembly
(pedestals and stands)

ROOM - Expanded Orientation for Drawer #D1 - FUR - U.M. (FR)



Each drawer has a ten-page "Instructions Manual" that outlines deployment procedures and project content. A comprehensive Instructions Manual persuades viewers to intellectually piece together a process that enabled transformation of simple furniture into complex installation.





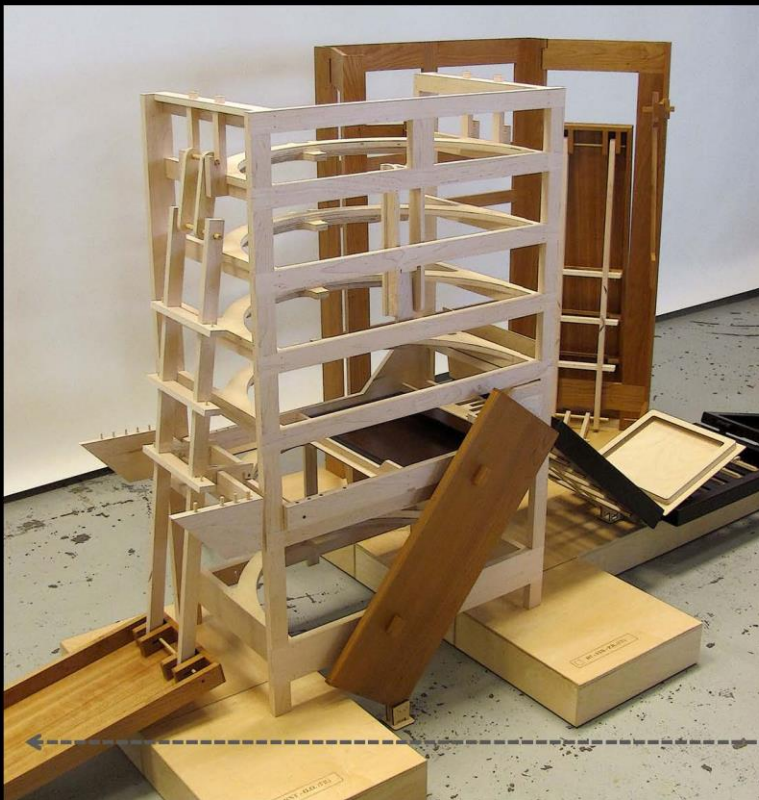
Images feature drawer at deployment mid-point. Drawer #D1 is an abstraction of the severed right-rear appendage of an arctic polar bear. Scale of the drawer and the referenced animal fragment is one-to-one.



Drawer #D1 – FUR – U.M. (FR) in full deployment.
Instructions Manual is integrated adjacent to the pedestal – but not shown in this image.



Images identify "ROOM" project just before deployment of the final drawer (Drawer #D7). Wall Assembly has been completely dismantled and 50 percent of the Floor Grid System has been removed. Dresser Frame Top was removed providing visual access to the interior compartment of the Chest of Drawers. The arched rib-like structure of the dresser frame is intended to communicate skeletal chest-area fragment of a large ocean mammal.

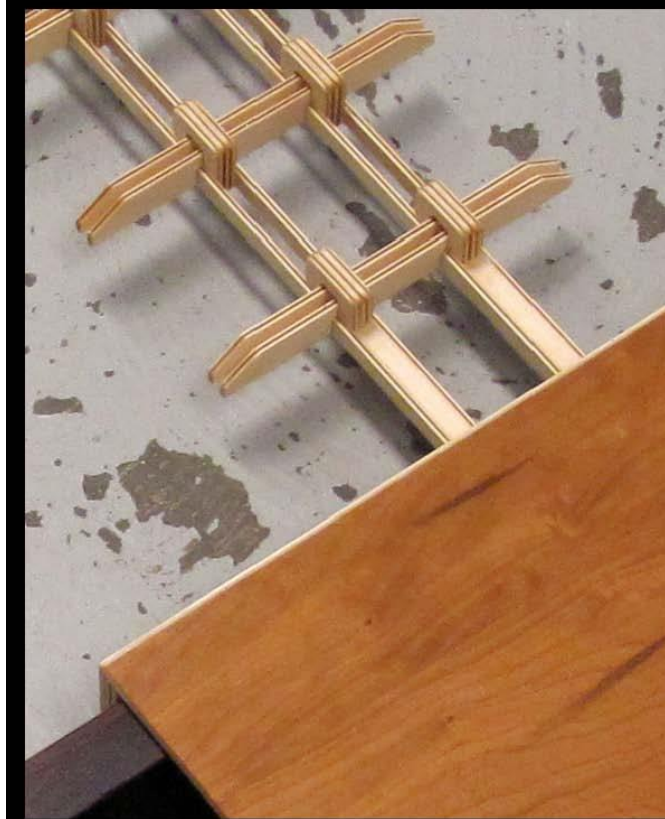


Cherry wood front and side panels of Frame Base are pulled and peeled away, revealing the maple wood skeleton of the chest of drawers.

The Dresser Frame Top has been removed and is featured as a separate installation.

Drawer #D7 is emptied and reinserted into the Frame Base. Collision of the two component systems results in ambiguity at the intersection.

Cherry wood dresser side-panel is dislocated from the dresser frame, but still adheres to the maple wood skeleton.



Detail identifies culmination of the eviscerated organism's eight-foot central spine.

The spine organizes and connects multiple compartments of deployed Drawer #D7, and creates an extension to the detached side-panel located on the opposite side of the skeletal dresser frame.

Thinking Through Making: Containing Ritual

Linda Zhang, Assistant Professor, Ryerson University School of Interior Design

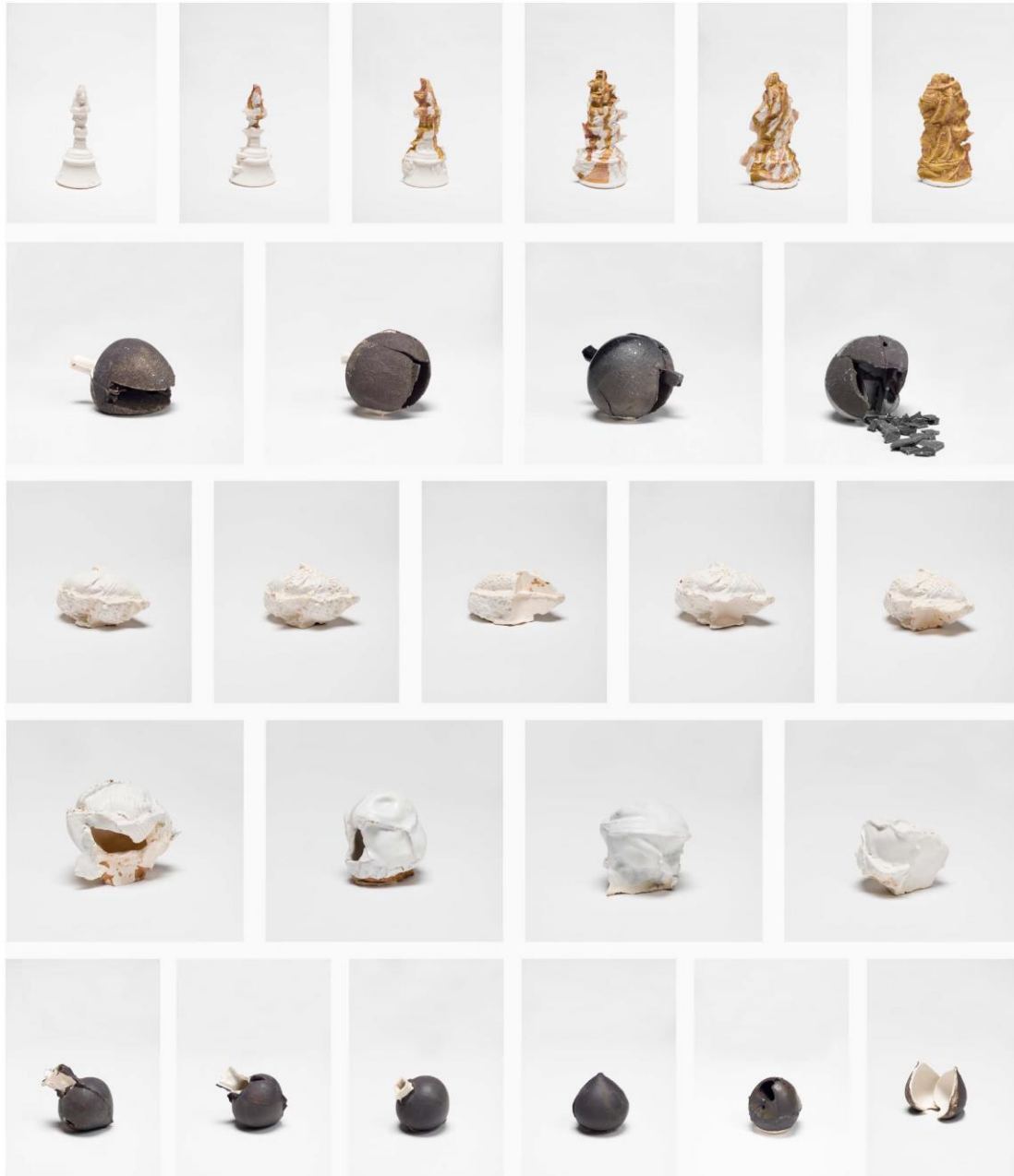
Abstract

1. Project's conceptual formulation: This project emerged from the desire to explore the process of making as a speculative space for critical thinking. We developed a "thinking through making" protocol with the objective to link immaterial experiences to tangible materials. 2. Idea generation or inspiration: Across disciplines, our understanding of reality is constantly shifting: from gender fluidity to scientific revolutions to identity politics in an age of globalization and displacement. This increasingly interconnected and shifting reality is full of messy immaterial in-betweens—what Sarah Ahmed calls affective economies. Affects are created as "the movement between signs or objects" (Ahmed, *The Cultural Politics of Emotion*, 45). Against this backdrop, this project develops an alternative design methodology—a "thinking through making" protocol—which examines how interior designers, architects, and shapers of the built environment can use tangible materials to address intangible in-betweens and negotiate the affective economies that make up our shared realities. 3. The creation process: Employing a time-based design process through ceramic slipcasting—an technique employed in the mass production of ceramics—we used material vessels to explore the potential of ceramics to express ritual. This necessarily meant entangling ourselves in the complex relationships that exist between the material expression and the immaterial effects of ritual. Some projects focused on material artifacts of specific rituals including the marks they leave behind, while others focused on the ritualistic performance through time, both including, especially, the design processes used to create those very artifacts. 4. The method used: Our method focused on the iterative and time-based nature of the slipcasting process. In traditional slipcasting, a plaster mold is repeated use to make multiple identical casts. In reality, these molds eventually deteriorate over time and are replaced. Cast from the same source mold, each cast is not the same but unique, even if ever so slightly. Exacerbating this material

deterioration, we enacted marks of ritual performance on the mold through time. Rather than being representations of themselves, each cast can be positioned as photograph of the changing mold over time. The casts record both the mold and the intangible ritualistic actions performed on the mold over time. Meaningless as individual objects, the cast series reveal subtle differences in-between each cast iteration. Through tangible materials, they speak to the intangible processes—the affective economies—that occurred through time. 4. Any other aspects the designer or artist feels necessary to explain best the intellectual thought or purpose behind the creative work: Architectural theorist K. Michael Hays describes our slipcasting process as post-linguistic: “It is not about the cast as an object or the mold as an object. It is really about the kind of intangible relays that happen in these spaces through the process of slipcasting....you can't, as a result, separate any of these things from each other and that speaks to the [intangible] dimension of the ‘Real’.” (Citation withheld) Rather than affirming or stabilizing, “thinking through making” offers an alternative design approach for addressing fleeting moments and circulating affects, contradictory histories and intangible meanings.

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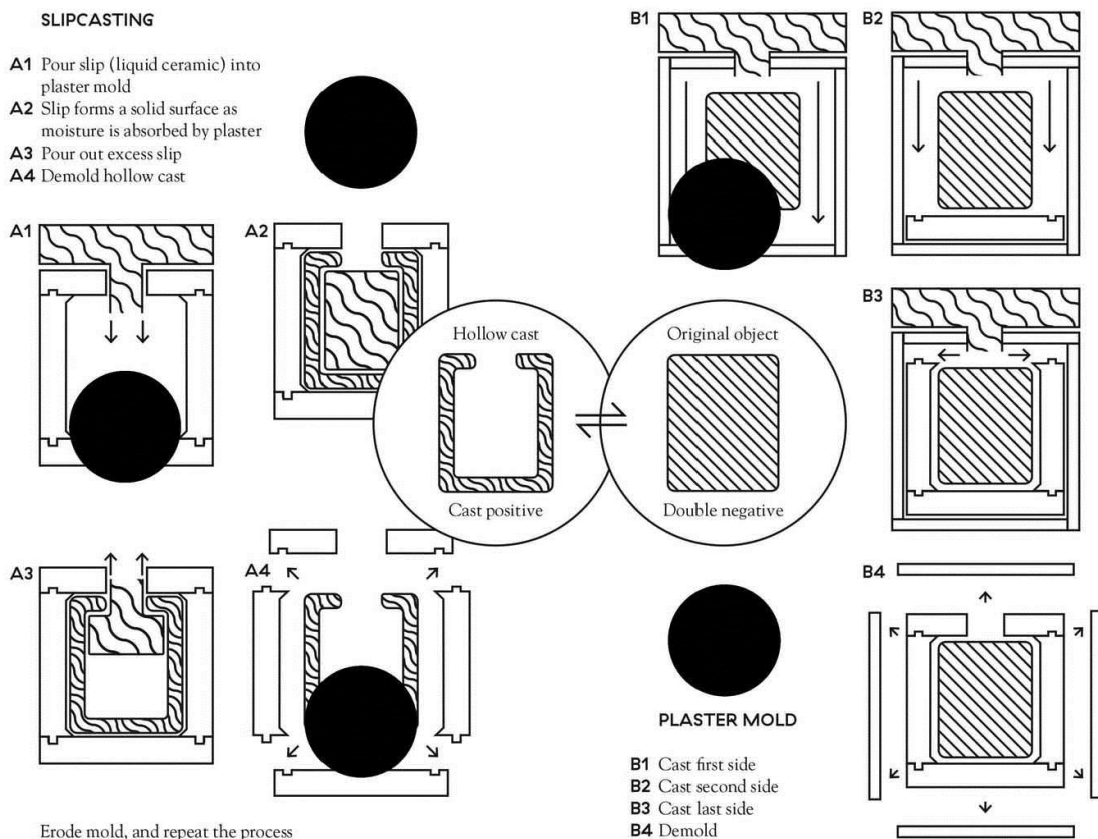
Sara Ahmed, *The Cultural Politics of Emotion* (New York: Routledge Press, 2015), 45



Beta-Real: Containing Nothingness

Five slipcast series corresponding to five different rituals. Each explore the interplay of digital technologies (3d scanning, cnc milling, 3d printing) with the analogue traditional craft techniques of slipcasting while negotiating intangible processes through time.

(Photo credit: **name withheld for blind review, please request before use.)



Slipcasting Processs Diagram

Inherent to the process of slipcasting ceramics, there is a continuous and intangible relay between oppositions—positive and negative, cast and mold—which questions the possibility of an original object, making at once positive original and double negative mold. The plaster mold is used as negative in order to form the hollow positive cast. At the same time, the plaster mold is also the negative of the original, precisely because the original object is used as a mold for the plaster mold—a double negative. Therefore, already present in the process of making, of slipcastin a single object, is an interconnected web of intangible realities. This work speculates from that inherent property as a starting point.

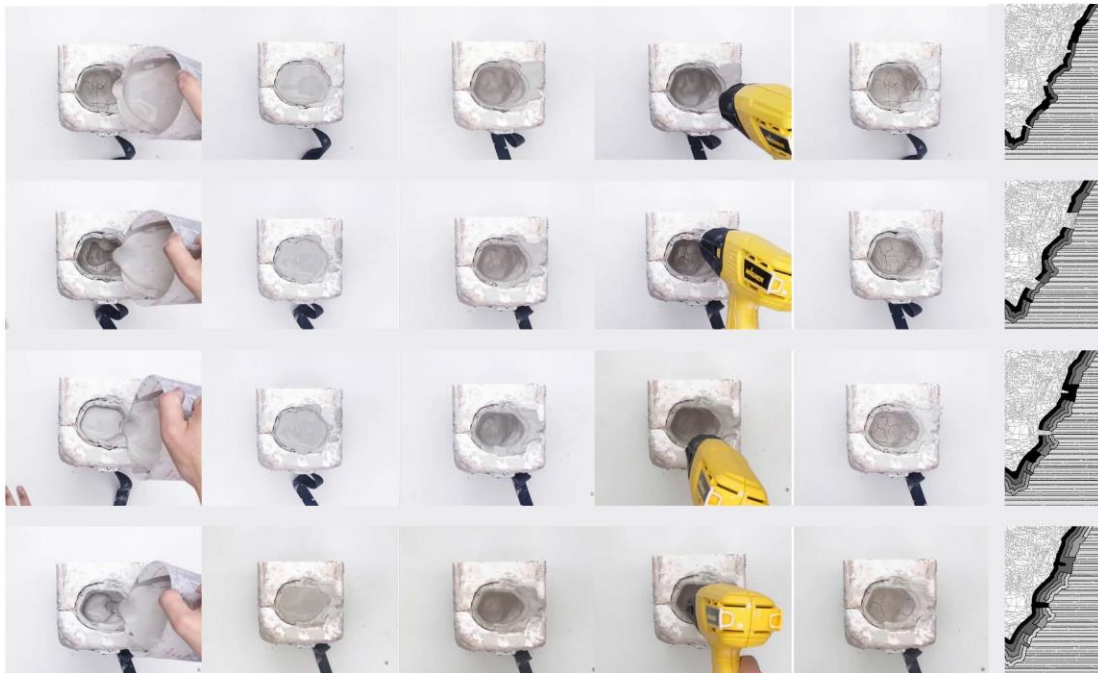
(Illustration credit: **name withheld for blind review, please request before use.)



Stress Fissures by * (*student names withheld for blind review, please request before use.)

- Top Left: Original ritual object made from pouring resin into a can of ash and cigarettes.
 Bottom Left: Plaster mold cast from cnc milled foam mold prototypev from a 3d scan of the original ritual object.
- Top right: Slipcast (glazed cone 6 Dover NS slip) ceramic cast.
 Bottom right: Section through the cast section showing layers of stress and fissures produced by iterative process.

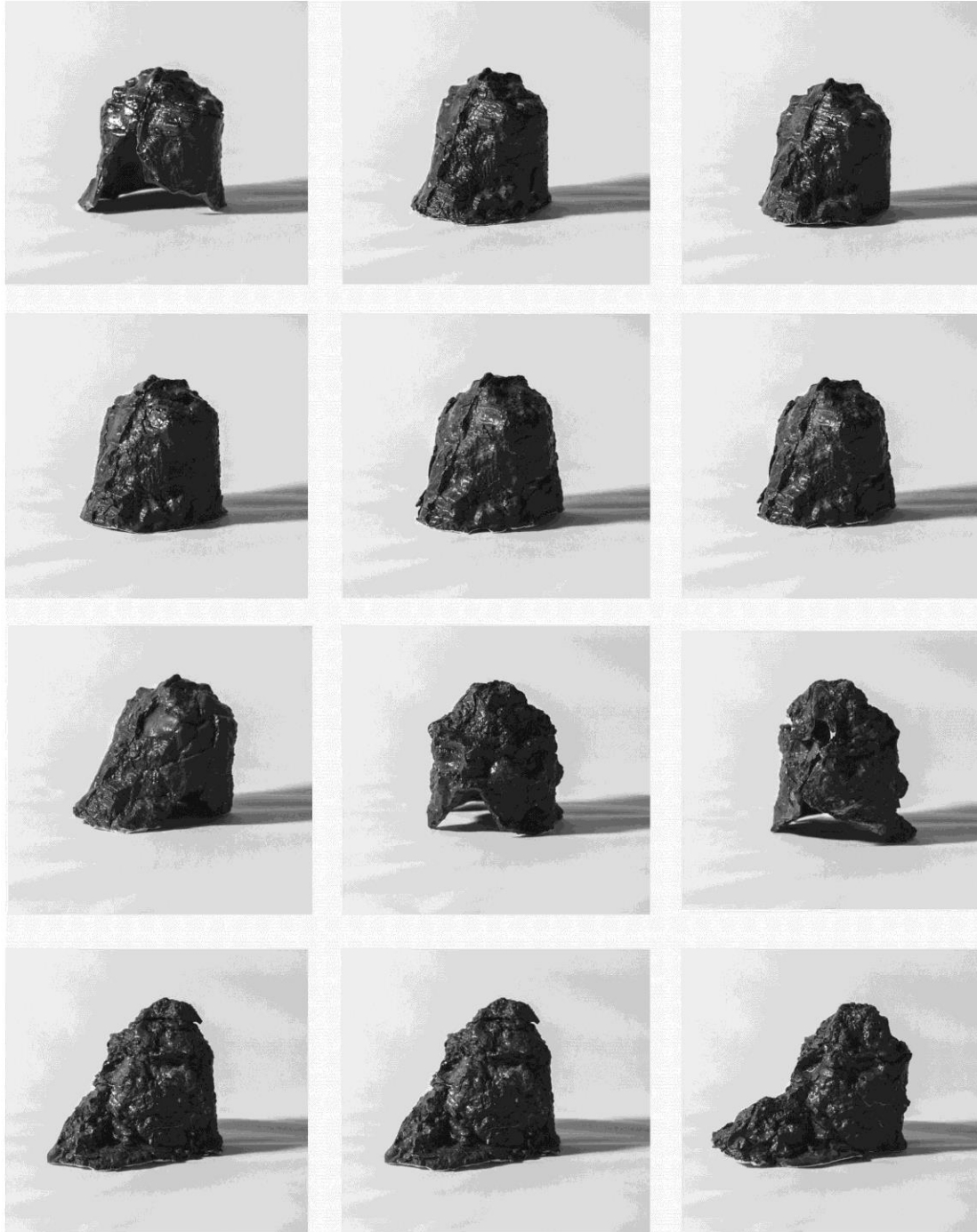
(Photo credit: **name withheld for blind review, please request before use.)



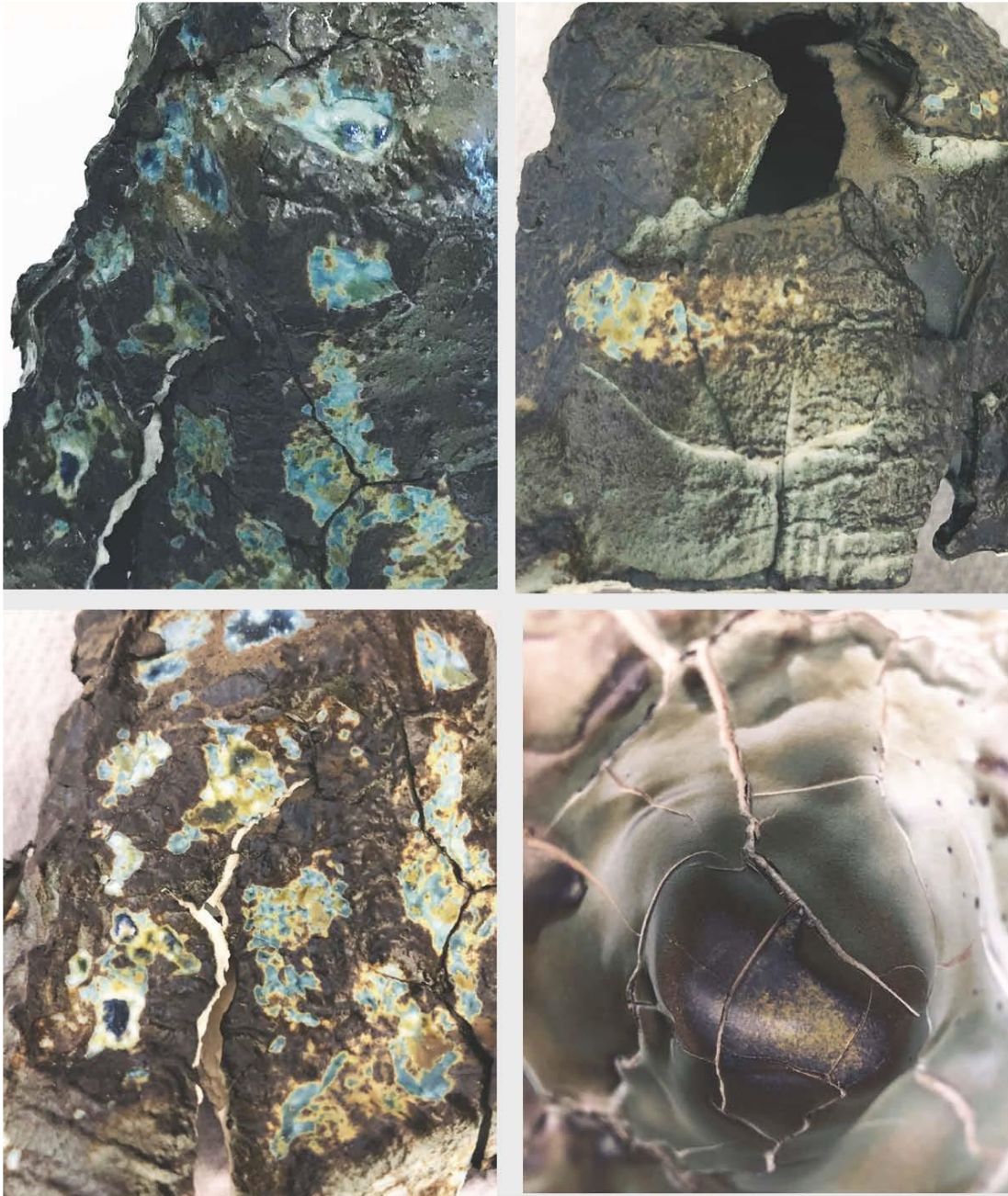
Stress Fissures by * (*student names withheld for blind review, please request before use.)

We perceive the ritual of cigarette smoking as a cyclical process, where the state of stress exists in an exponentially growing condition. Our iterative urns identifies the state of stress as the product of external forces that accumulate over time. In our slipcasting process, the urns are repeatedly fractured and reformed to allude to textural representations of stress, resulting in the aggregation of fragmented parts to make up a whole. The application of heat brings stress to the ceramic slip. Forcing it to dry faster than natural, the heat causes the material to crack and for voids to appear. The layering of slip then congeals the urn back together. The process is exponentially performed and repeated throughout the iterative series. The aggregative artifact of performances speak to our pursuit to find indirect means of depressing the intangible relay between stress and relaxation found within the ritual of cigarette smoking.

(Photo credit: **name withheld for blind review, please request before use.)



Stress Fissures by * (*student names withheld for blind review, please request before use.)
(Photo credit: **name withheld for blind review, please request before use.)



Stress Fissures by * (* student names withheld for blind review, please request before use.)

Close up details of interior and exterior surface texture illustrating the accumulation of layering and cracking performed over time, as well as the interaction of those stresses with the glazing and firing process.
(Photo credit: **name withheld for blind review, please request before use.)



Exhibition (*exhibition name withheld for blind review, please request before use.)

View of final state plaster molds on view during exhibition.

(Photo credit: **name withheld for blind review, please request before use.)

Acknowledgements:

If making is thinking, if the process of slipcasting is itself a form of cognition, then it is necessary to insist on the social and cross-disciplinary nature of these material explorations. This exhibition was created from a sustained, multi-disciplinary conversation among participants at the School of Architecture, the Departments of Ceramics and Sculpture in the College of Visual and Performing Arts, and the Department of Religion in the College of Arts and Sciences Department. (**Key names withheld for blind review, please request before use.) It took place in the format of an elective fabrication seminar which I developed and taught. This this “thinking through making” methodology was already in development before the seminar, however, all work shown here is student work from the seminar. (**Student names withheld for blind review, please request before use).



Exhibition (*exhibition name withheld for blind review, please request before use.)

View of iterative cast series on view during exhibition.

(Photo credit: **name withheld for blind review, please request before use.)

“Salon”, The Interior as Ludic Space: Modeling Equitable Social Engagement

Alan Bruton, Associate Professor, University of Houston

Abstract

The prefix “Inter” sets out interior practice broadly as “between, among, in the midst of, mutually, reciprocally together, during, intervening, shared by, involving or derived from two or more, within”, constituting the interior as a human inter-relational concern. “Program” as understood in practice as inter-relating spatial resources with human activities is the *métier* of the interiorist. In the design of the project “Salon, a game of Tables & Chairs” the author explores the potential of the interior and an accessory within it, the game itself, to model and produce social interactions of equitable engagement. Games are microcosmic embodiments of carefully defined and performed program layered with social and psychological significance. [1] Salon reprograms the familiar space of the checkerboard used in Chess (deployed as often as *décor* as it is as gameplay space), symbolic of the confrontational space of battlefield. Salon replaces the chess pieces, furnishing the board with miniature tables and chairs and the checkerboard itself, relating the familiar board directly, incongruously, to the scale of a room. The human centered ethos of interiority is not one of confrontation, but mutually beneficial interaction. Invoking the the 18th/19thc. Parisian salon, the game resurrects a memory of shared empowered social space. As a room miniature, Salon produces what Susan Stewart elucidates as a miniature’s role as “metaphor of the interior space and time of the bourgeois subject.” [2] Players receive points for maneuvering the chairs into arrangements of conversation around tables, recursively modeling the civil interaction of the full scale players playing in the room itself. The rules model civil decorum: no jumping over furniture, pushing furniture off of squares or off the board. The tonal palette of the pieces is a grey scale. Although the tones are distinct, conversations are formed by all and any combinations of toned pieces, an aesthetic strategy to maximize the experience of equitable possibility. While each player is trying to earn the most points by placing their pieces into conversation, the competition is not

annihilating, and placing pieces correctly requires congenial cooperation. As antidote to our increasingly mediated lives, there is a resurgence of physical gaming, perhaps as a reclamation of the civic value of social interaction in interior space. As Hannah Arendt says: “to live together in the world means essentially that a world of things is between those who have it in common, as a table is located between those who sit around it.” [3] By referring to the ludic theory of Huizinga, and game theory [4], the author will situate Salon among artists and designers currently and historically working in this manner. The project in progress was first presented in a scholarly setting in a winter 2018 symposium, proceedings unpublished. The ensuing critical evaluation of the project lead to a total reassessment of the physical and programming design, the thorough re-testing with focus groups, and a final conclusive release of a significantly improved tabletop board game object and experience more in line with the intended ethos of the project, as well as final prototype furniture designs. References: [1] Huizinga, Johan. *Homo Ludens: A Study of the Play-Element in Culture*. Angelico Press, 2016. Print. [2] Stewart, Susan. *On Longing*. Duke University Press, 2012. Print. [3] Arendt, Hannah. *The Human Condition: A Study of the Central Dilemmas Facing Modern Man*. New York: Doubleday Anchor Books, 1959. Print. [4] Salen, Katie, and Eric Zimmerman. *Rules of Play: Game Design Fundamentals*. Cambridge, Mass: The MIT Press, 2010. Print.

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2019 IDEC Annual Conference Submission
Charlotte, NC

Conference Theme: *"Changing the Game?"*

Category: Creative Scholarship: Design as Idea

Format: 20 Minute Slide Presentation

Abstract Title:

"Salon", The Interior as Ludic Space: Modeling Equitable Social Engagement

Appendix, Project Images:













A Table for Common Meal: A Ritual to Evoke Tension in Joy and Grief, and Perfection and Imperfection

James David Matthews, Professor, University of Tennessee, School of Interior Architecture

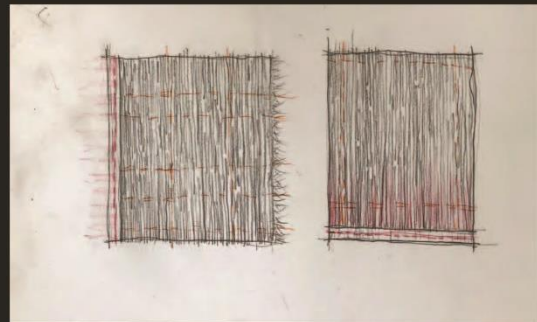
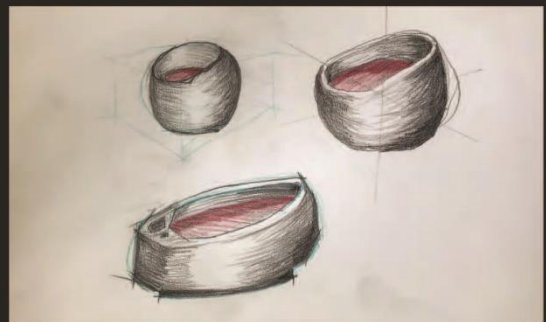
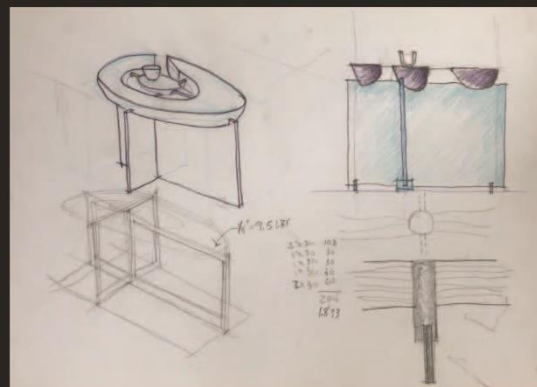
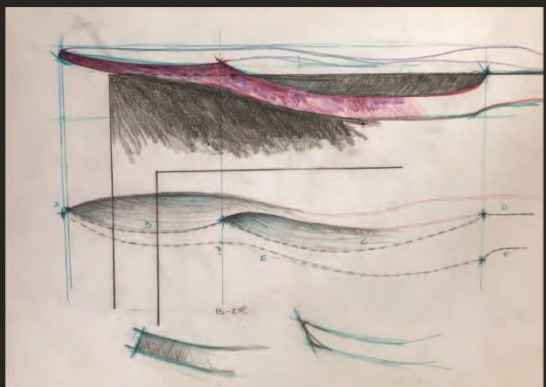
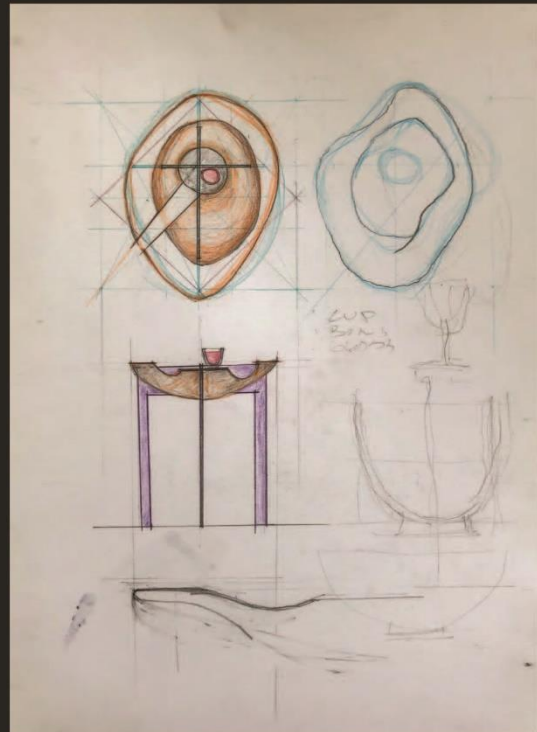
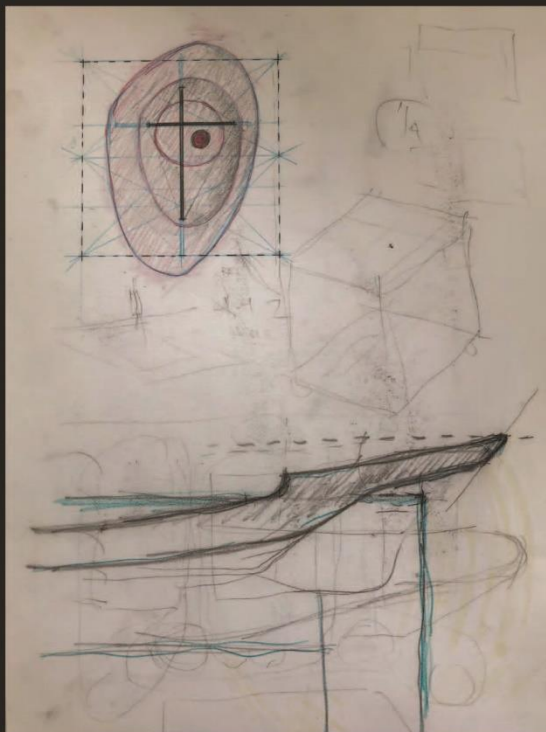
Abstract

The project explores the design and fabrication of a table for Common Meal in a Christian Church to enhance community through the tensions of joy and grief in remembrance of Christ. The table is a place where a small groups gather, one person lifts the cup of wine, others remove the cloth, the cup is placed back on the table. A community partakes in the ritual of Common Meal. The church maintains an “open table” where all are welcome to take part in the ceremony. For over ten years the community took common by approaching the table one by one. A major objective of the project is to transform the individual act of Common Meal into a community ritual. The designer attended church services, observed the community, partook in Common Meal, and maintained a journal of observations and personal reflections. They also met with church leadership to discuss theological implications of the design and to discover an experiential transformation of the ritual. A complementary influence is the Tea Master, Sen no Rikyu, and the Japanese tea ceremony. The tea ceremony recognizes and enhances the seasonal moment and provides for “touching knees” in a close social gathering. Artifacts are put forth to create conversation and enhance a tension between perfection and imperfection. The redesign of the ritual and table enhances the experience of community by bringing small groups of people around a shared plate and cup in a manner where shoulders touch and hands negotiate the dipping of the bread into the wine. Individuals join in a common experience to link memories to the present and imagine a transformed future. The table expresses contrasting forms, shapes, materials, symbols, patterns, textures, and colors are composed in a manner to evoke tension between joy and grief and perfection and imperfection. The intent is to transcend interpretation and to question the pursuit of a correct answer. The table is designed to enhance interactions between fellow members of the community. The

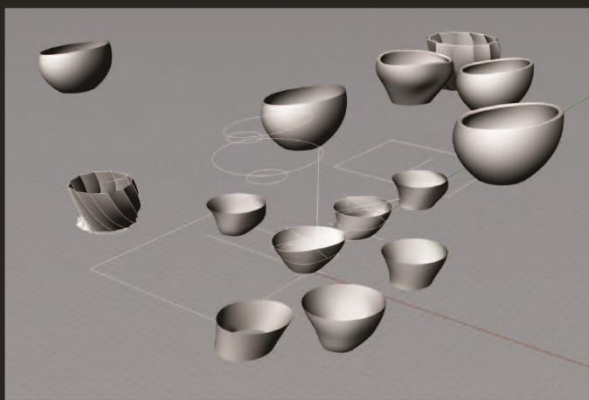
ritual journey is to engage sameness and difference as an interlinked narrative. Sameness, by always serving bread and wine, and remembering faith traditions. Difference as the individual unfolding dimensions within the seasons of life and as we see different modes of spirit within the others gathered around the table. The table base is a “rigid” square transformed into a cross, cut from steel with precision. It is the material of weapons, steel with black patina, contrasting with the live edge sycamore slab, an urban harvested diseased tree. The form of the top evokes the shape of a plate and the base and top work together provide greater structural stability. The wood top is cut on a CNC mill and hand finished with wax. The cloth is woven on a computer-driven jacquard loom where design reveals a faint pattern of the cross combined with colors found in a living tree and blood and wine. The cup is 3-d printed in porcelain and it is shaped and scaled for negotiating the dipping of bread.

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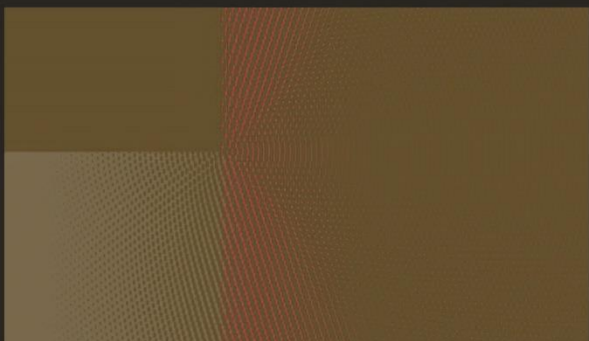
Initial sketches and ideation.



Digital and physical prototypes of 3-d printed cups in plastic and porcelain.



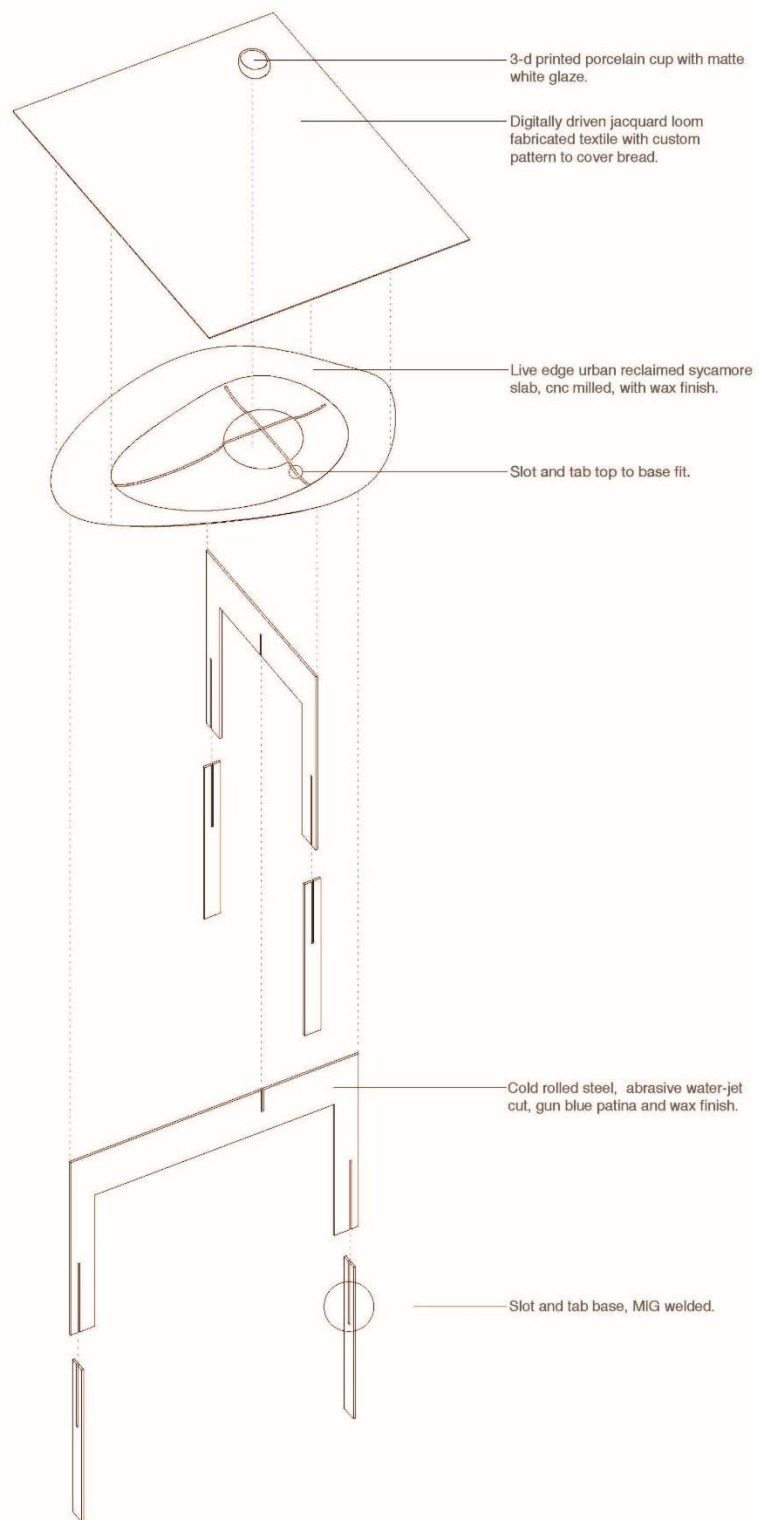
Digital model and physical 1"=1'-0" scale model of table.



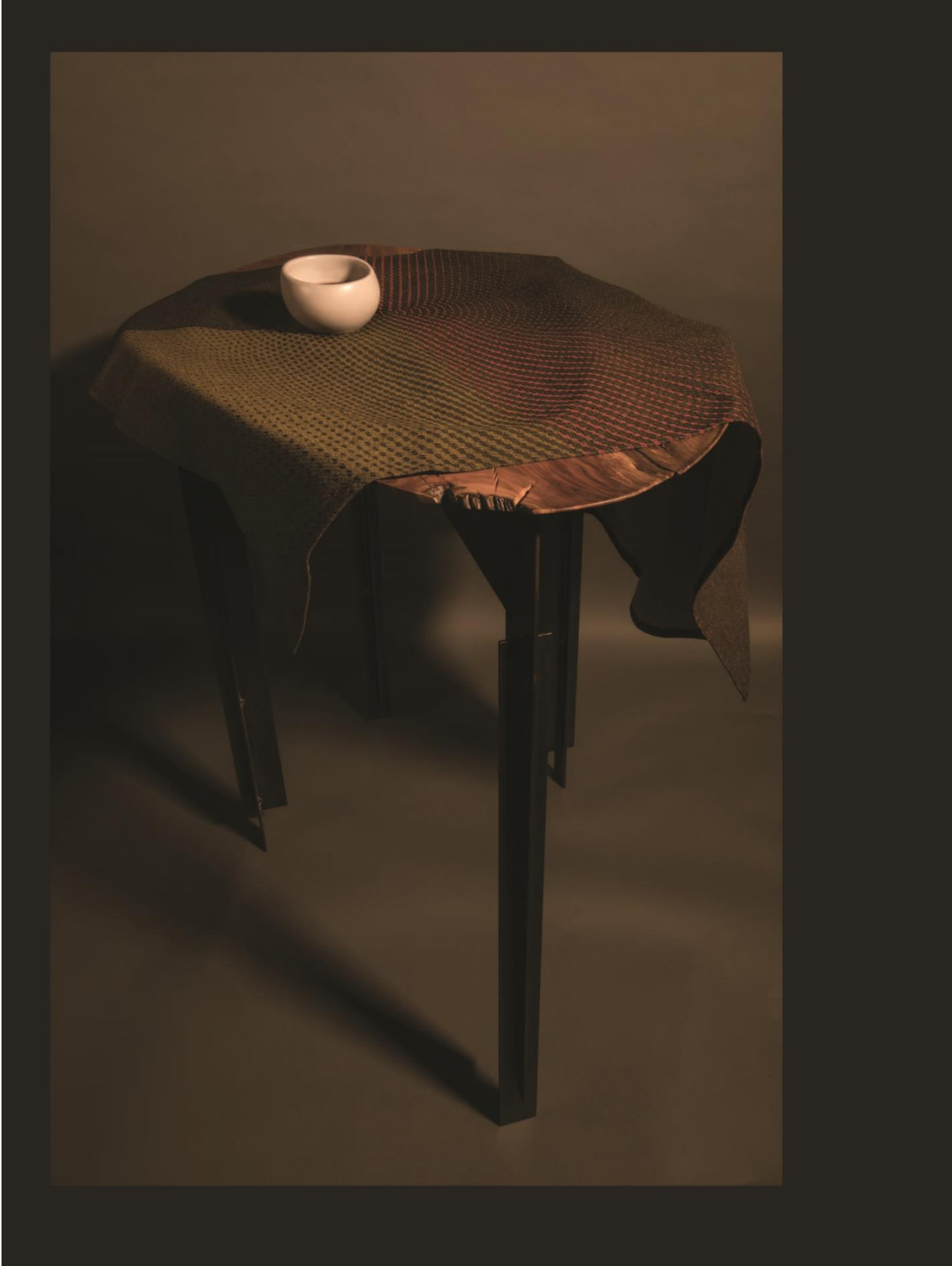
Design of textile for digital weaving.



CNC milling of table. Detail of CNC milling wood surface prior to hand finishing.



Exploded axonometric.













Emotive Intelligent Spaces

Mona Ghandi, Assistant Professor of Architecture, Washington State University, School of Design and Construction

Abstract

This research explores solutions to integrate people, spaces, and sensing technologies to arrive at a successful Human-Computer Interaction through affective computing. The aim is to create emotive spaces that can resonate with the immaterial aspect of the human. They work by sensing their surroundings and improving the quality of life for those who are physically and cognitively impaired, adjusting themselves according to neuromuscular and biological impulses. Relying on computational design, artificial intelligence, and emerging technologies, this research blurs the line between mind and space and seeks a seamless connection and feedback responses between them. The aim is to create live spaces which can “feel” and respond to psychological and emotional needs based on behavioral patterns.

Objective and Importance The objective is to democratize design and rethink conventional spaces in favor of adaptive structures that are capable of accommodating and mobilizing an under-represented group of people not currently capable of shaping their spaces based on their personal needs. This interdisciplinary research makes use of robotic self-adjusting structures, interactive systems of control, programmable materials, and sensory networks, altogether set into motion to help the human without human help. It has significant implications in the medical field for health awareness and assisting people with disabilities, neuromuscular diseases, age-related incapacities, PTSD, and autism, ultimately empowering them by offering more equality and independency. Specifically, by looking at the problems of PTSD and autism, where people experience a deficiency in social interaction, this project can serve as an augmentation tool, treating spaces as a medium of interaction and communication.

Methodology This ongoing project is about making a full-scale interactive wall that can adjust its shape and configuration based on real-time human physiological and psychological feedback. The expected result will be a wall that can sense, learn from, control with, and respond to physical and emotional real-

time data gathered from biological signals (such as sweat secretion, muscle tone, body temperature, perspiration, skin conductance, and heart rate). To achieve the goal of the project, this research requires a multi-faceted approach. Part of it is engaged in a sensory network of collecting data and understanding the human condition (Affective computing) while other parts involve kinetic structures, embedded programmed microcontrollers, actuation systems (SMA, pneumatic systems, etc.), and materials that can respond in kind. The wall will equip the environment with smart devices such as EEG headset, biological data collector, eye tracker, facial emotion detectors, voice/gesture recognition, etc. to create a sensory network capable of collecting users' real-time behavioral, biological, and neurological data within the realm of IoT. Two small-scale transformable walls were created as prototypes to test the idea. They can reconfigure themselves and change the size and location of the openings to adjust the view, control the light and natural ventilation, or change their shape according to users' programmatic needs. They implement kinetic components and active shapes to perform certain reconfigurations based on registered data via sensors. The collected data is sent to embedded microcontrollers and then is forwarded to the actuators. Actuators (servos, Shape Memory Alloy, pneumatic systems, and soft robotics) perform various actions. Materials are exposed to elements such as heat, light, and air pressure to activate kinetic components and achieve maximal geometric transformation. This research is a framework for integrating adaptive systems and data-driven approaches into the design, transforming the built environment into a living organism that is intelligent, sympathetic, sensitive, and yet under the comprehensive control of users.

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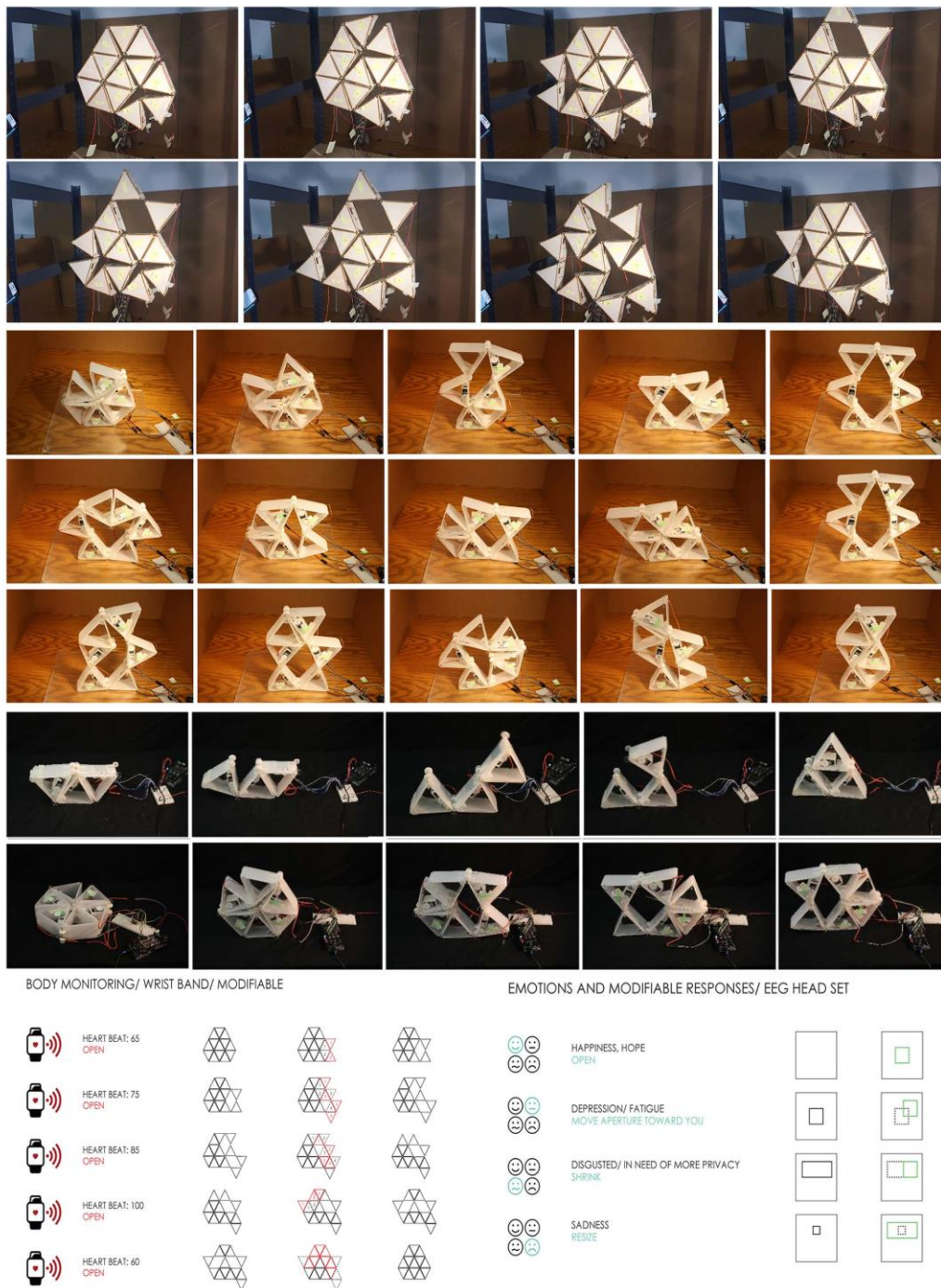


Figure 1. Wall prototype with adjustable triangular modules that changes configuration based on the user's emotional and mental data.

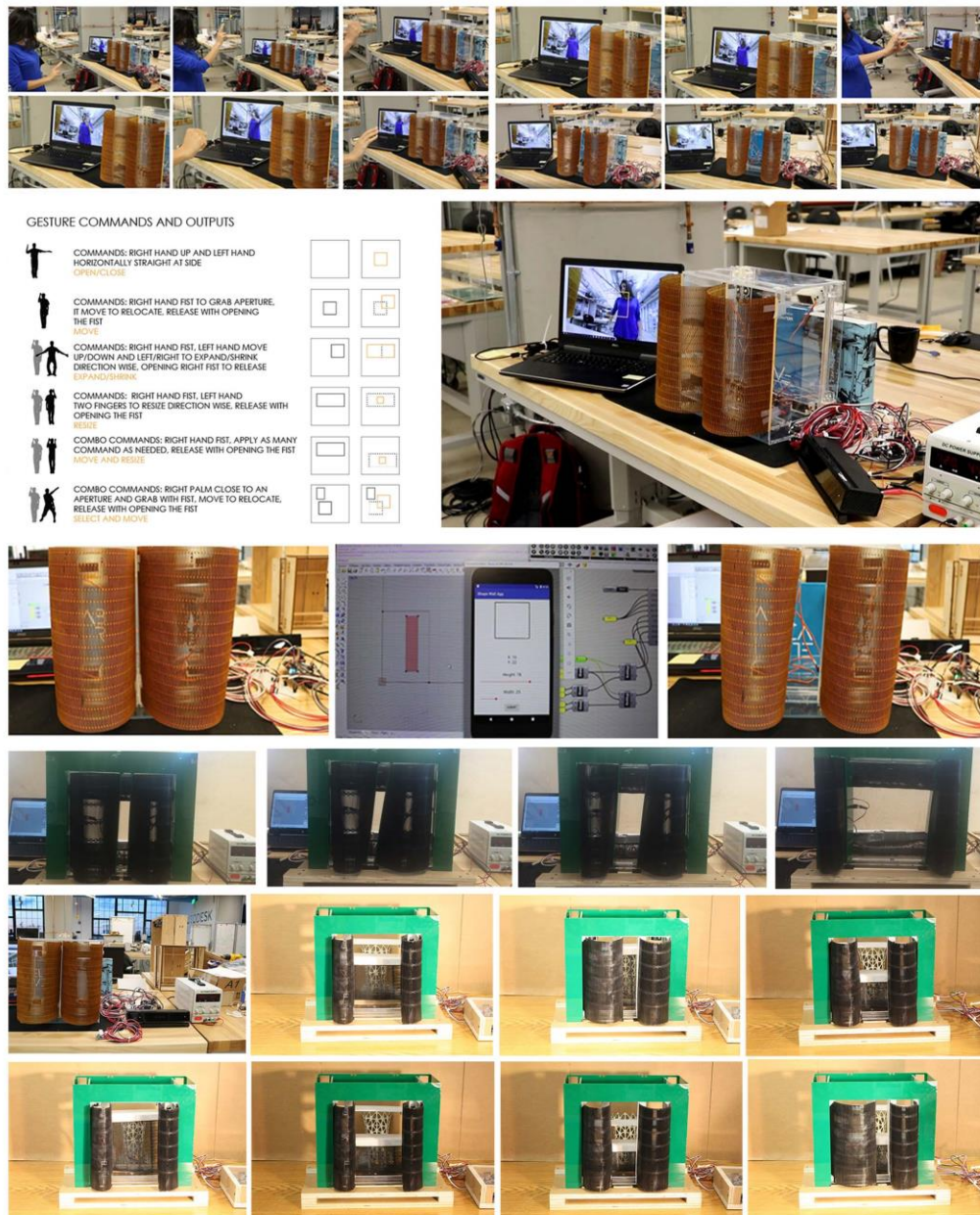


Figure 2. Wall prototype with adjustable window. Size and location of the window changes based on the emotional and mental data.

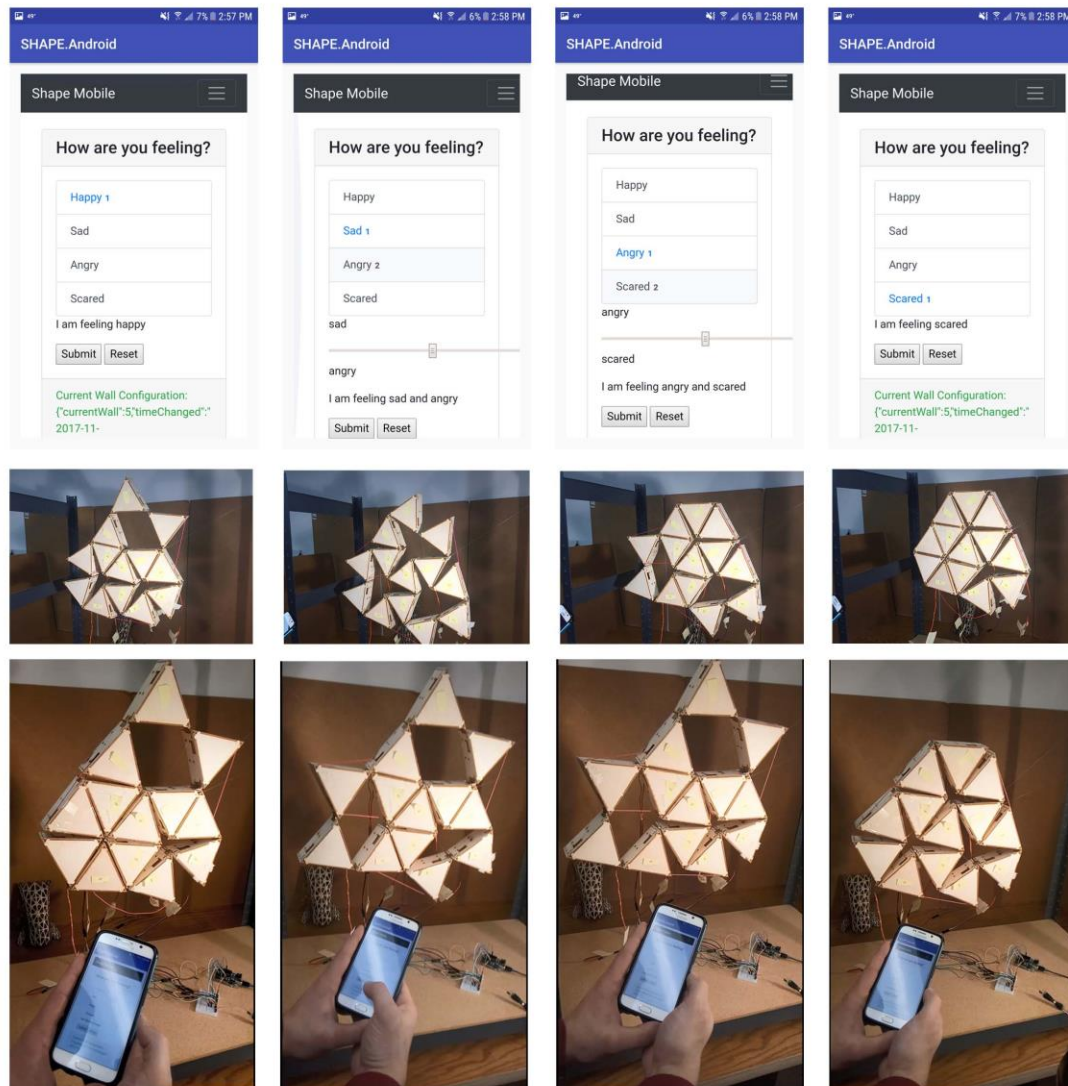


Figure 3. Emotional interaction via touch commands and wall reconfiguration based on tactile collected data.

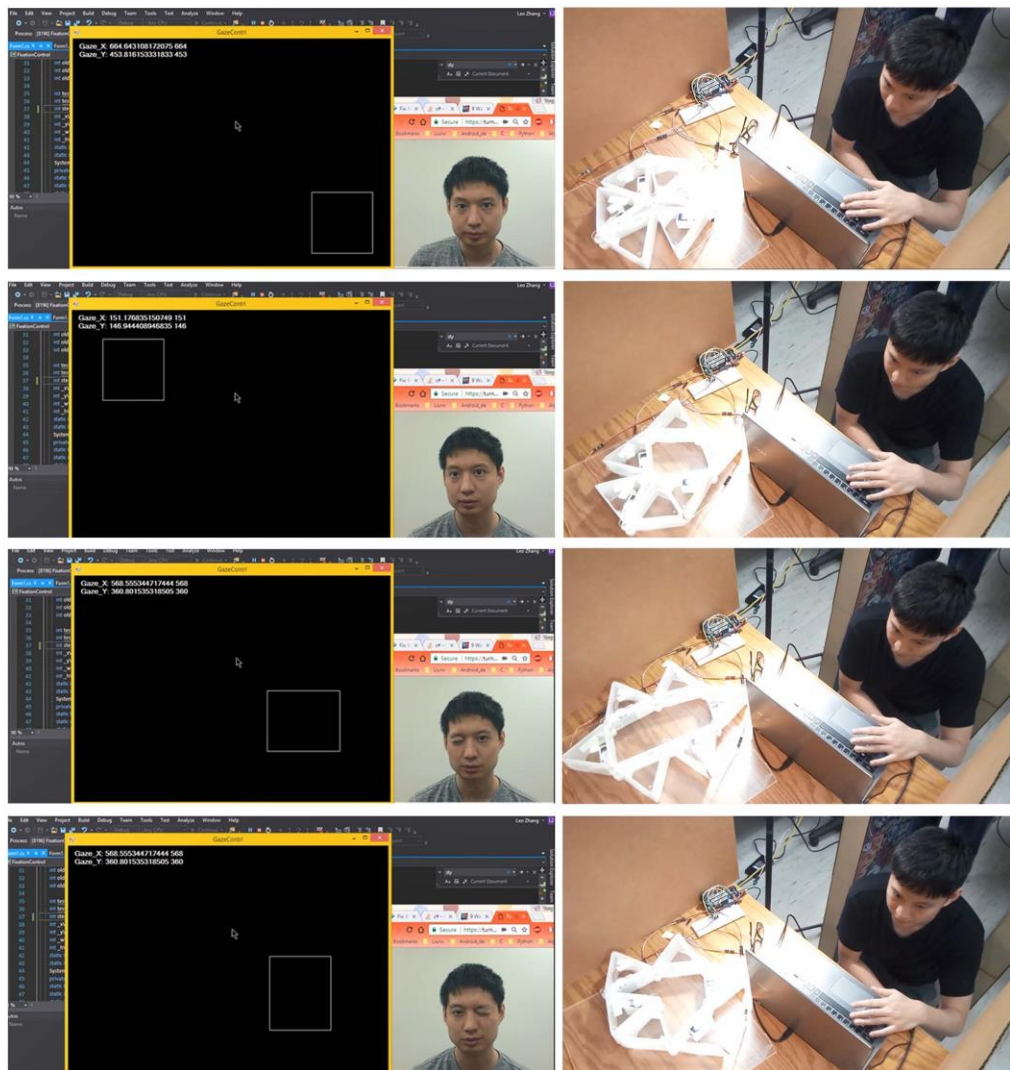


Figure 4. Emotional interaction via vision commands and wall reconfiguration based on eye movements.



Figure 6. Emotional interaction via neurological data and wall reconfiguration based on the neurological signals. (Top) Emotional interaction via biological data and wall reconfiguration based on changes in collected biological data. (Bottom)

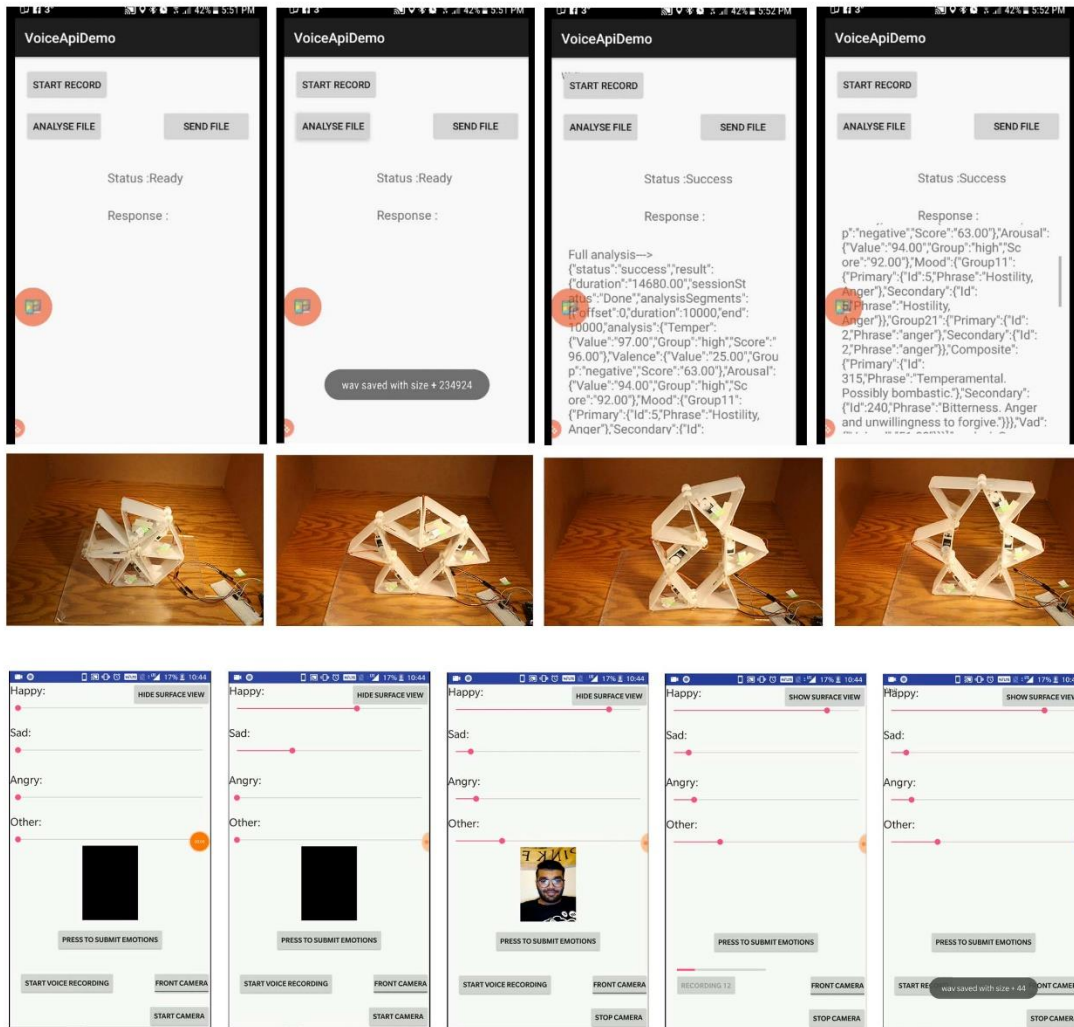


Figure 7. Emotional interaction via voice commands and wall reconfiguration based on differences in voice intonation. (Top) Correlated emotional information gathering (voice, face, ground truth, and biological data) via smartphone app. (Bottom)

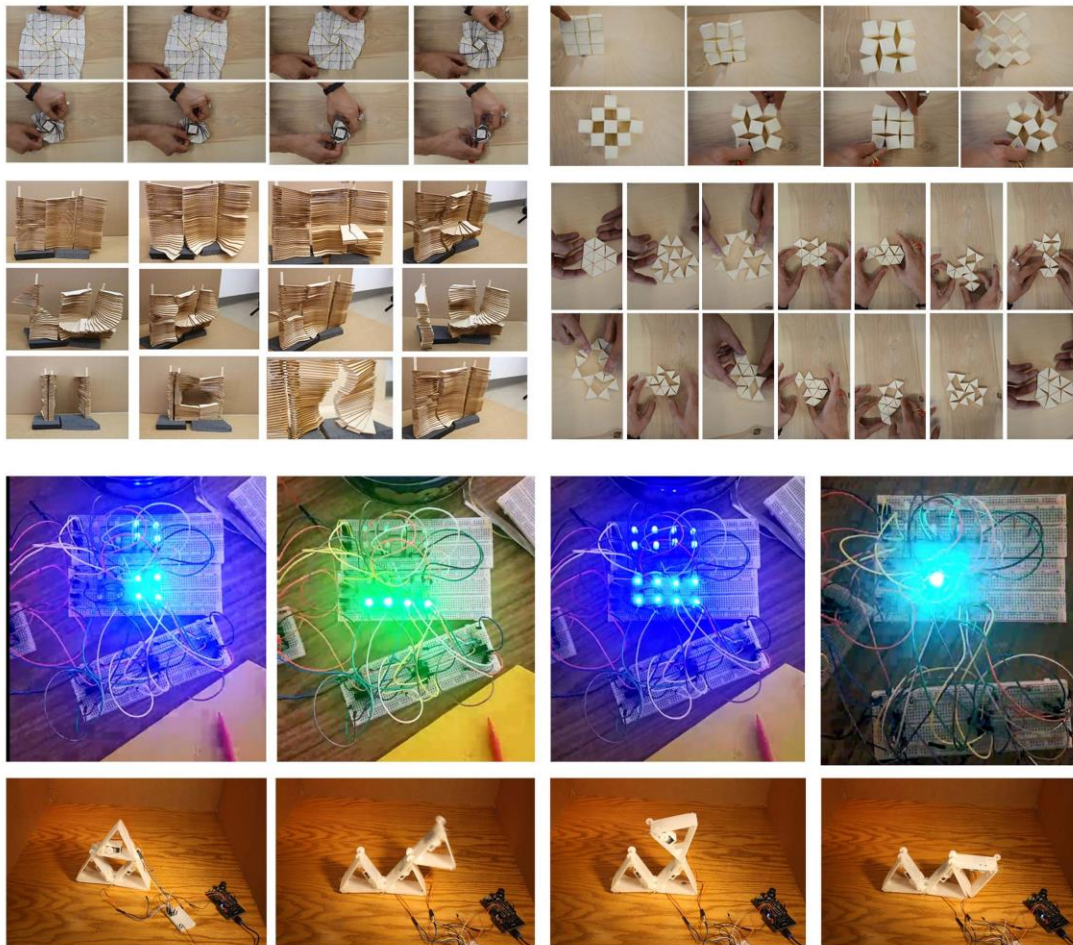


Figure 8. Study of transformable structures for intended shape changing via origami, folding, and active shapes. (Top) Illumination and operation of the wall prototype using user's emotional data, Raspberry Pi, and microcontrollers. (Bottom)

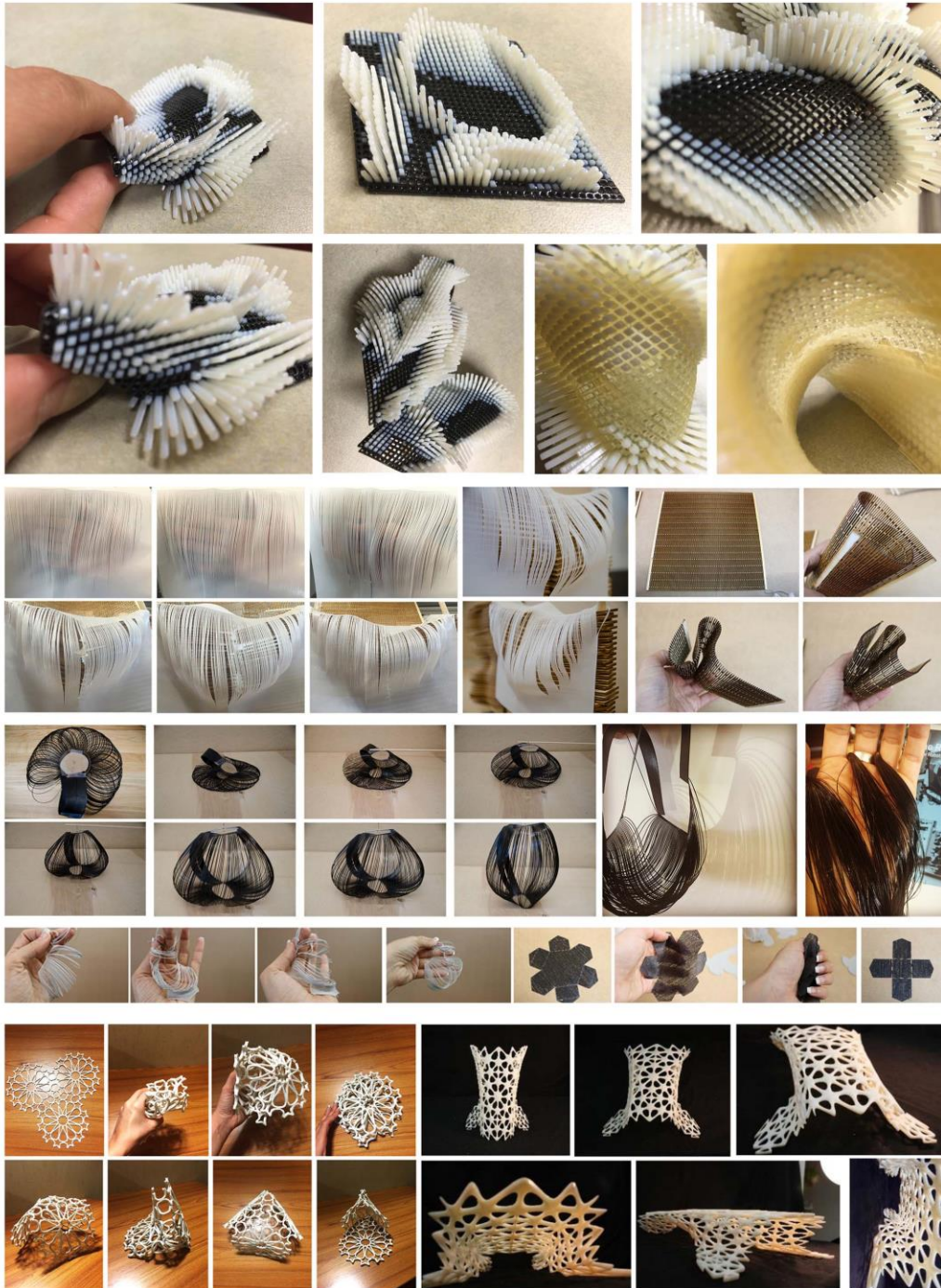


Figure 9. Exploration and 3D printing of composite materials, with different properties for various transparency, translucency, stiff and soft behavior in the shape-changing structures.

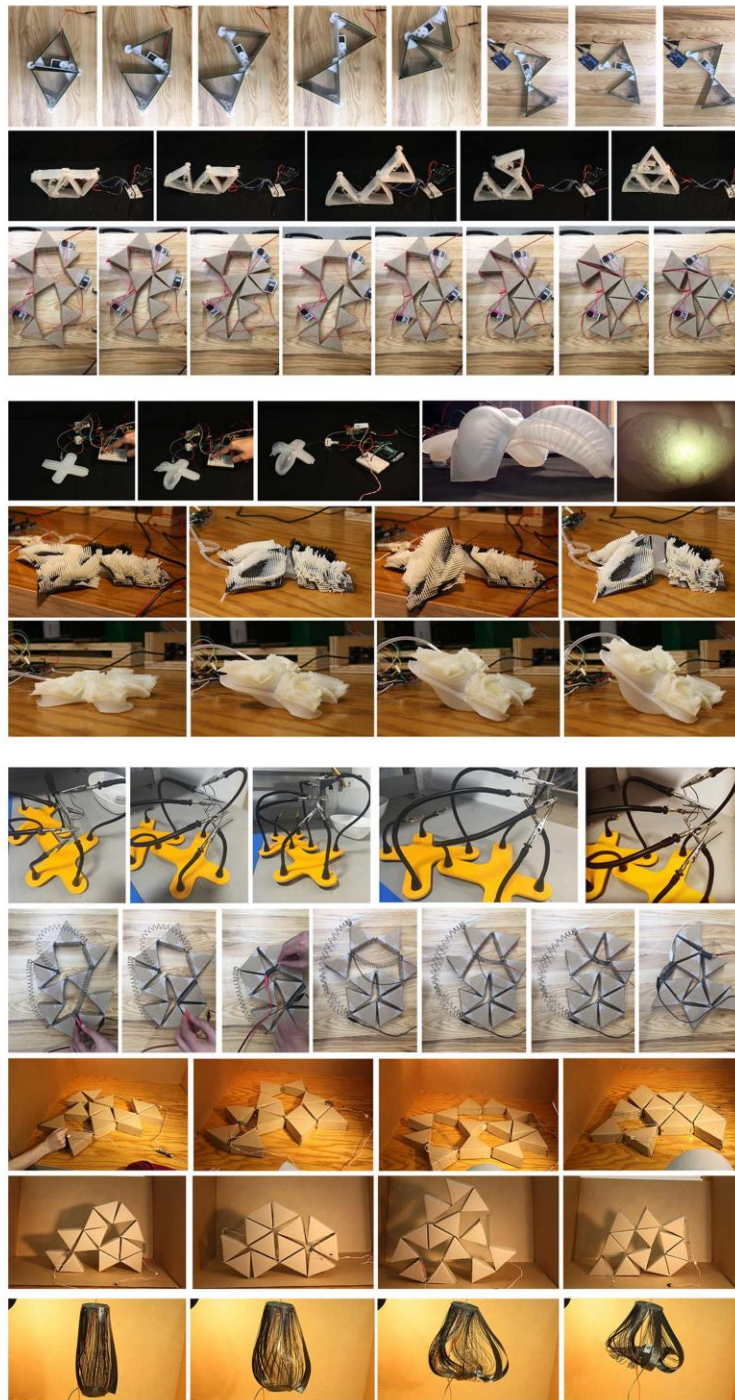


Figure 10. Study of mechanical actuators, SMA (Shape Memory Alloy), pneumatic systems, and soft robotics for actuation and structural transformations.

Hexad

Jeffrey Day, Professor, University of Nebraska

Abstract

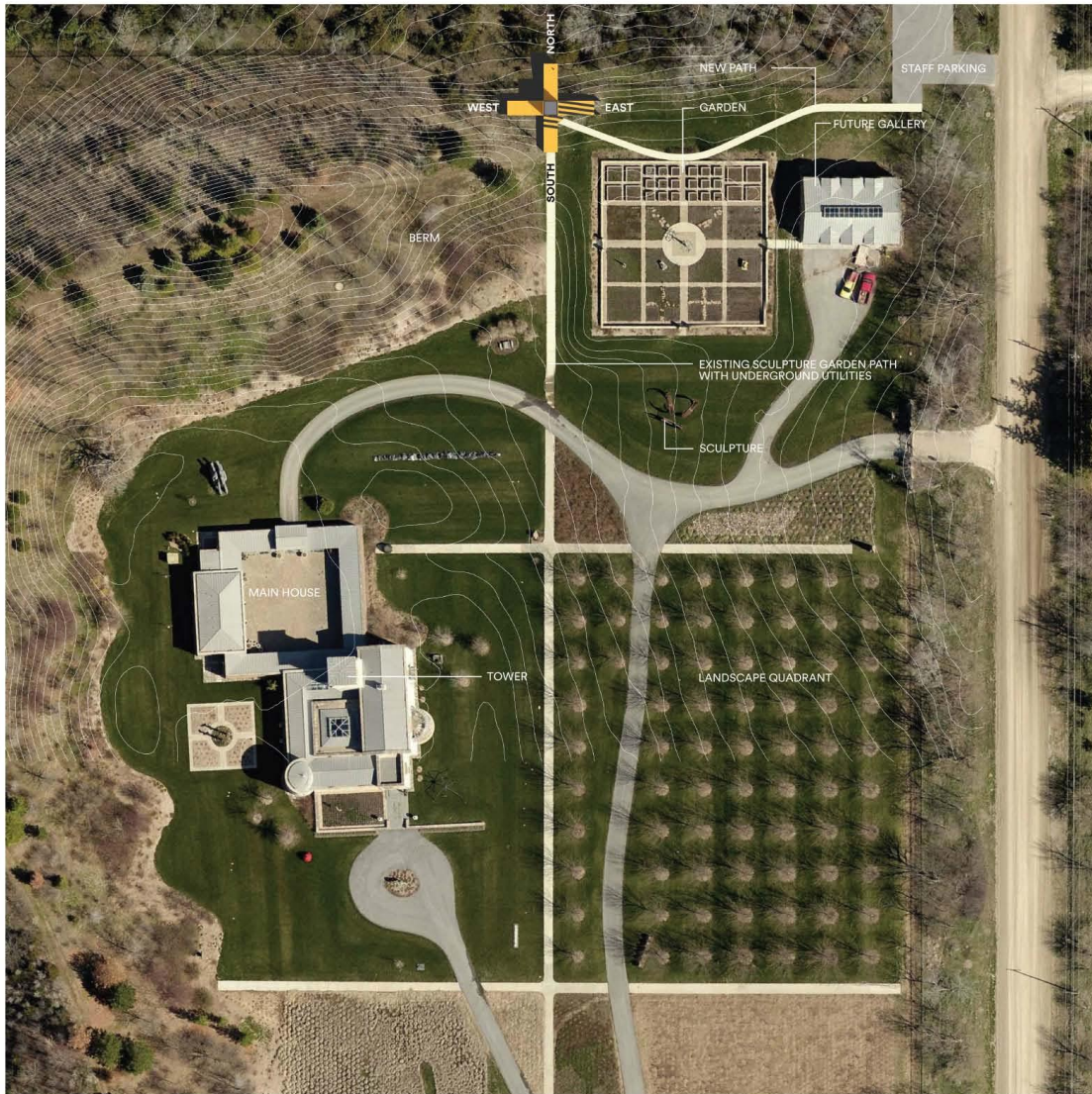
This project enacts an architecture born of the Jefferson Grid. Whereas Jefferson's delineation of the grid was a finite cognitive act, the operative fact of the grid continues to dominate the process of inhabitation in the Great Plains. In regions devoid of extreme topography, position supersedes place as the locus of inhabitation. The lines of the grid are the infrastructure of settlement. Over time, the virtual lines drawn on the map and staked-out across the land accrue actual physical boundaries. Roads are paved along the section lines, shelterbelts are planted between quarter-sections, and buildings are near to the edges. What would an architecture look like if designed using this Cartesian logic, not simply located within it, an architecture constructed of axes themselves without a spatial mass? How does one inhabit this world where the virtual and the actual coexist? Hexad ("a set of six") attempts to do this through a marriage of pure form and circumstance. The project is a caretaker's house for a private estate in a sculpture garden. Where the main house follows a neo-Palladian model of clear circulation axes organizing distinct programmed areas, Hexad programs the axes themselves. The building takes the shape of a Tetrahemihexacron, geometric figure composed of 3 intersecting prisms, oriented to the cardinal grid. The 832s.f. building separates the basic functions of home (Living, Eating, Bathing, and Sleeping) into four 160s.f. wings oriented to the cardinal points established by the existing site plan – a miniaturized Jeffersonian Grid. The remaining two axes – up and down – provide supplementary spaces for Viewing the property (the tower) and Dreaming, a lower level with a library and a view to the sky through the tower. Each wing follows a singular logic of program: Living has a suspended fireplace and a folding sofa, Eating is a walk-through pantry kitchen with a sun lit dining area, Bathing has an enclosed WC with a large open tub, and Sleeping has a Murphy-bed and storage. Each of the 4 wings ends in a sliding glass door facing a unique view. Both sleeping and bathing areas may be closed with large pivot

doors. All interior spaces are monochromatically white with some black details and furniture items. Simple and direct interior devices support the discrete functions. The 4 horizontal wings comprise split 40' ISO single-use shipping containers (each wing is 20' long) while the tower is formed from a 20' container resting on the stiffened corners of the wings. Powder-coated steel bar grating floor in the center and above in the tower allows light to penetrate all levels. Other materials and systems include: structural steel at the core, concrete foundation, light gauge metal framing, closed-cell foamed-in-place insulation, aluminum patio doors, aluminum skylight, epoxy floor covering, industrial alternating tread stairs, custom built-in cabinetry, Corian, custom interior pivot doors, split HVAC systems, thermostatically controlled exhaust fan, concealed LED and fluorescent lighting. Hexad treats program as a Cartesian system of functions, each with a specific orientation to a unique site. Construction planned for 2019.

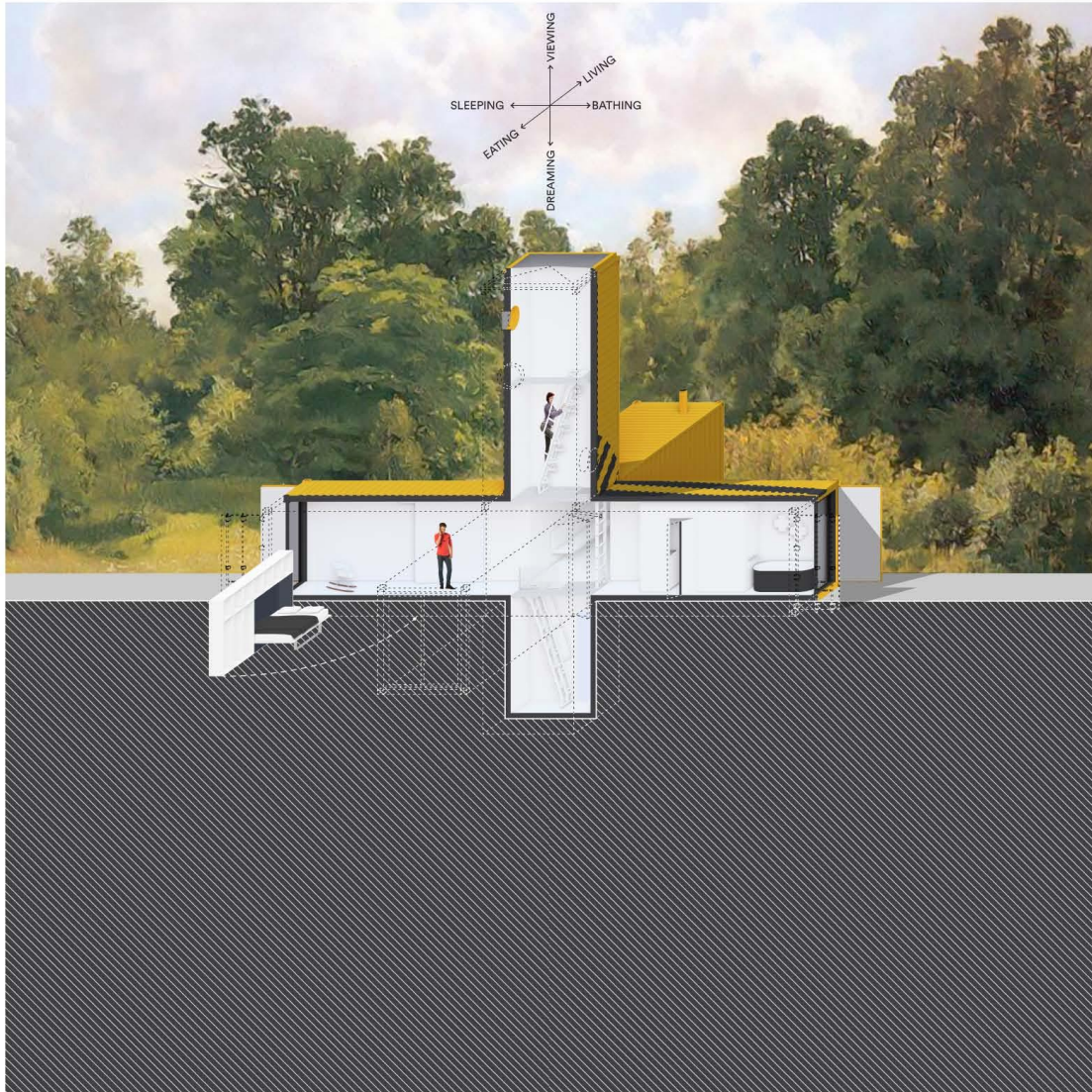


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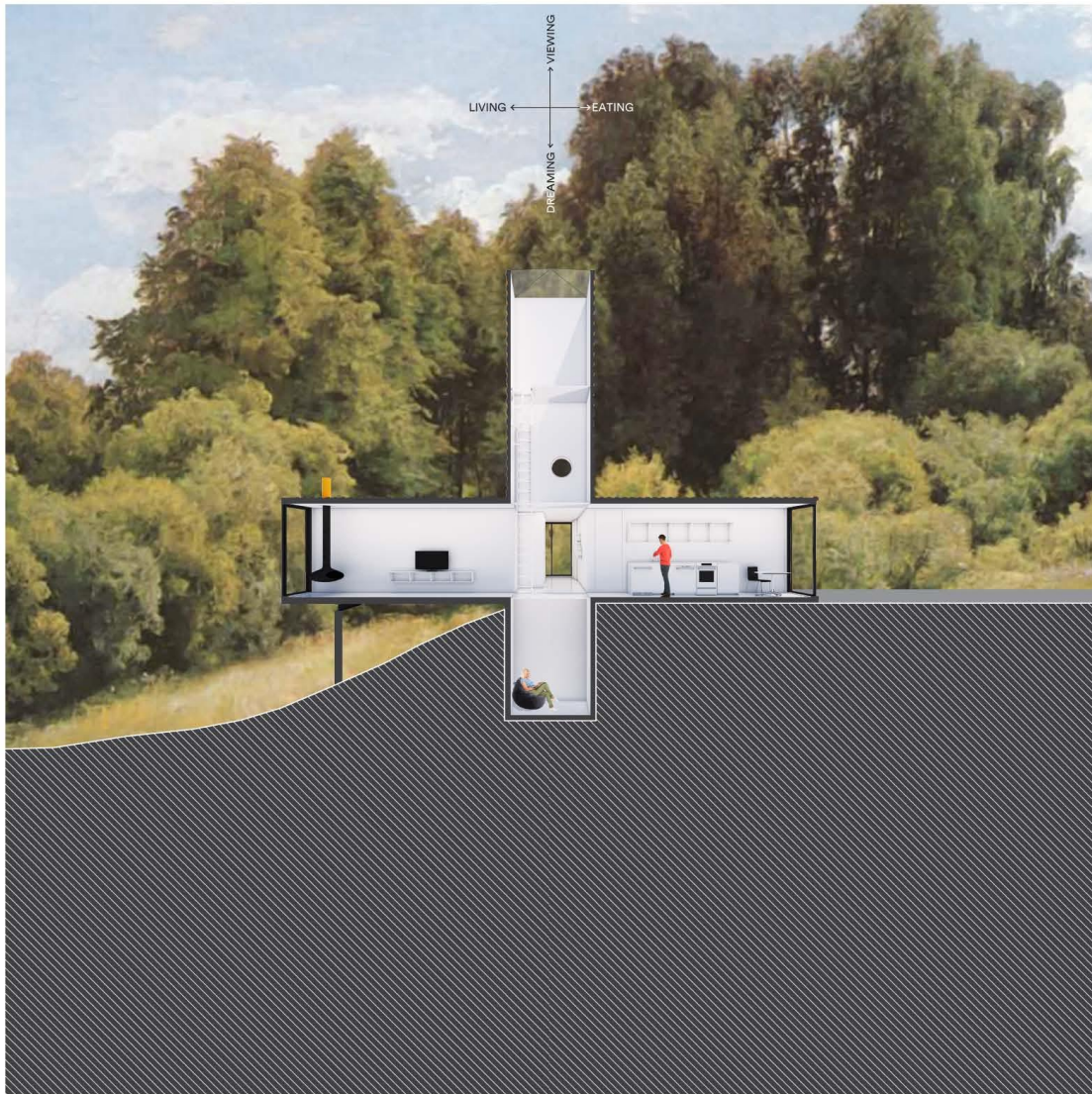
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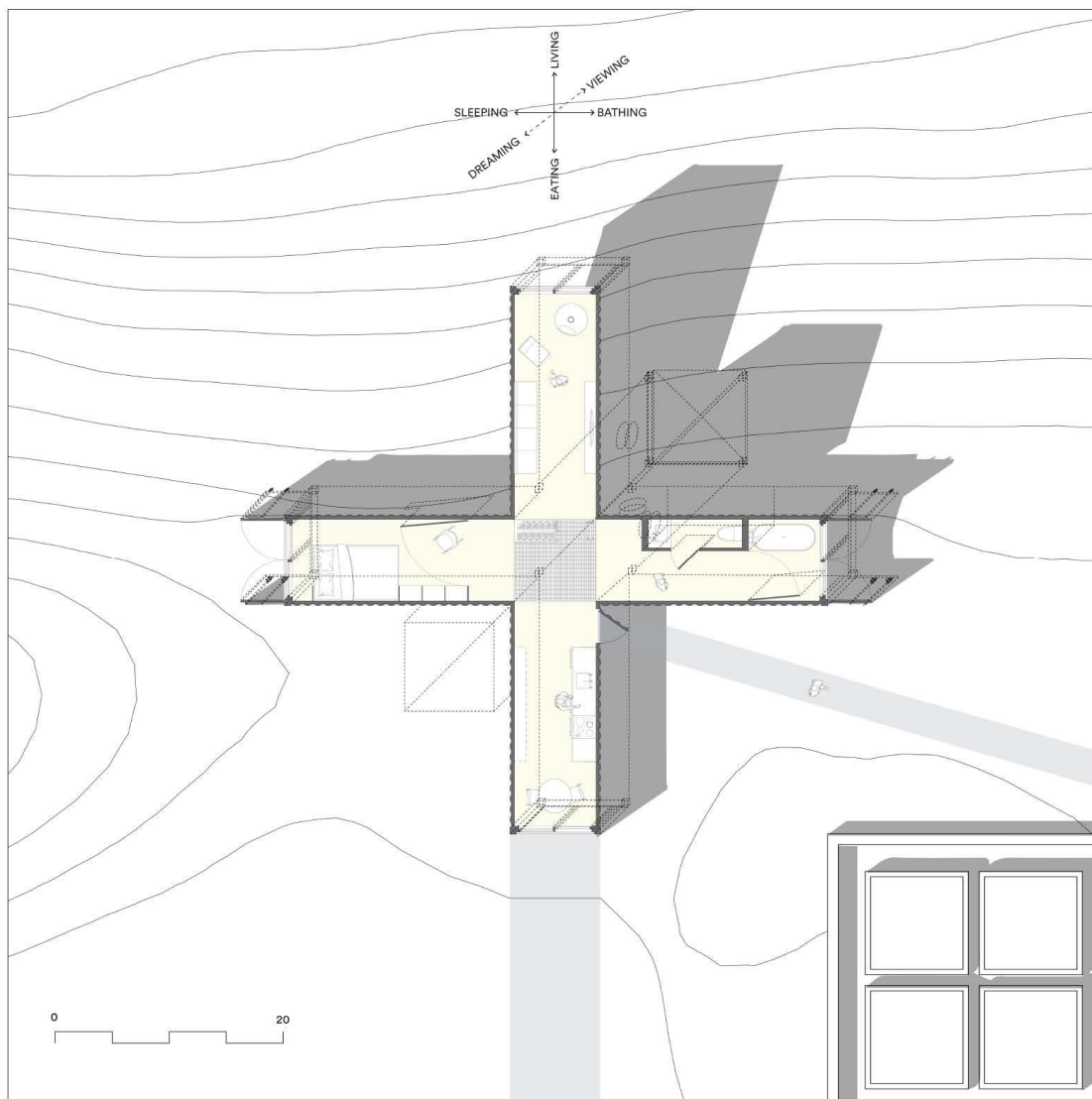
Site aerial photograph with main house
& existing landscape



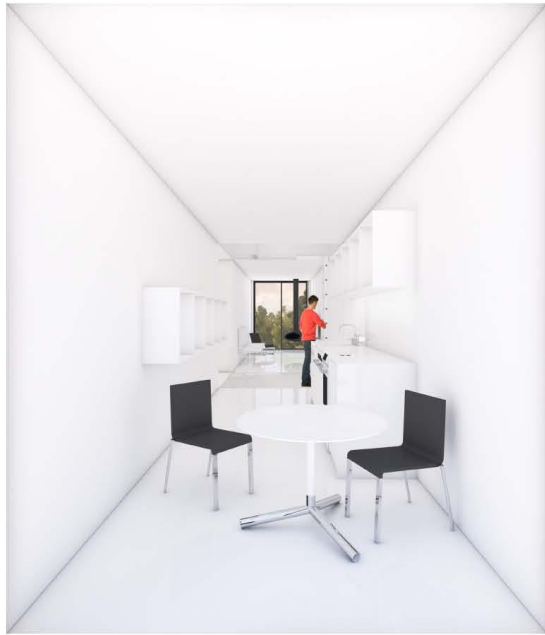
Sleeping <--> Bathing (section oblique)



Living <--> Eating (section perspective)



Plan at main floor



Living <-> Eating



Intersection point

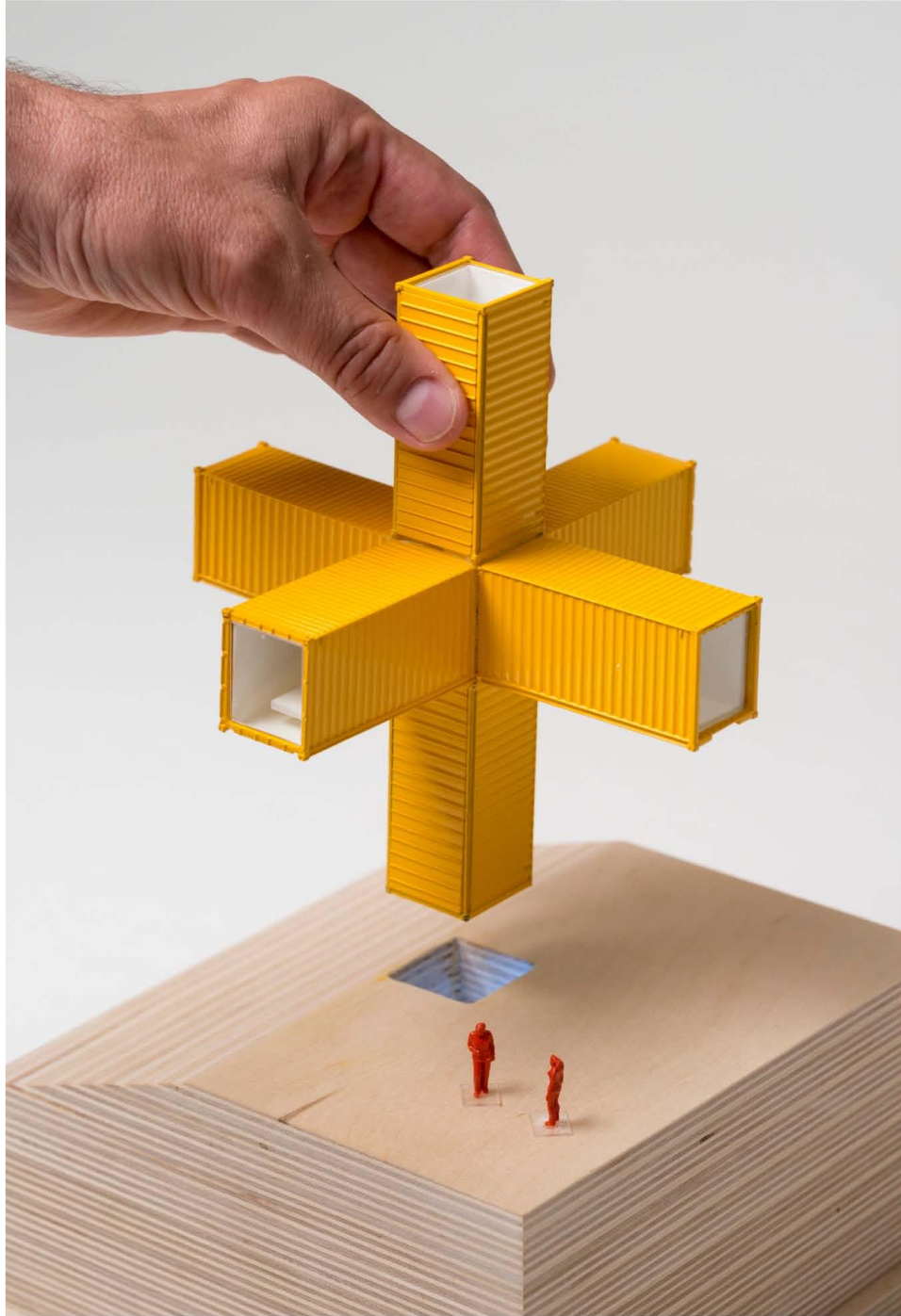


Dreaming <-> Viewing (vertical axis)





Bathing <-> Sleeping



Making Connections In The Space Between

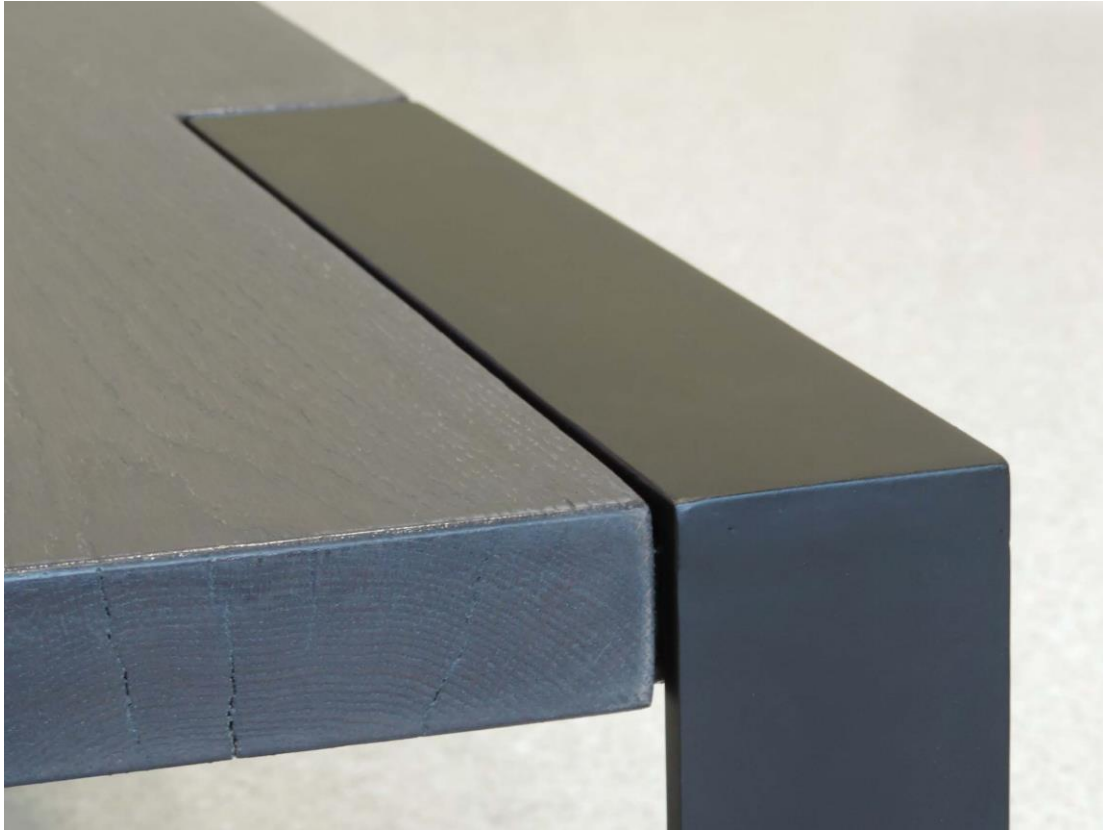
Adrian Boggs, Instructor, High Point University

Abstract

DESIGN AS IDEA: MAKING CONNECTIONS IN THE SPACE BETWEEN In the age of machine and technologically driven assembly, the joint or connection between materials and forms is commonly ignored or worse, hidden, so as to present an appearance of sameness and conformity. When the explicit discussion of joinery is overlooked or otherwise avoided in contemporary furniture design, I would argue that we not only lose a unique opportunity to experiment in the gray area between Craft and Design as it relates to connection, but we also sacrifice the special opportunity to communicate the power of design to the world around us. This work seeks to create a discussion about the understanding of 'connection' in the built object and in the built environment. To this end, the conversation moves toward a comprehension of the component nature of object design, specifically the reality that any object can be made from multiple forms, shapes and materials. As a result of modern technological processes, we often overlook these connections and largely see only the end result. The opportunity to enhance our understanding of the connection between components and materials deeply informs us of the design process and ultimately helps us better understand this process and the resulting created object in a much more nuanced and colorful way. Let there be no ambiguity: with this submittal, it is the designer's specific intent to draw focus to the joinery of the object by separating its material connections with a gap or datum of negative space. Through this focus of attention, the object asks the viewer to consider the relationship of connectivity between forms and materials that occur in the object. The datum of separation between the wood and steel components openly and actively invites the viewer to participate in a study of assembly and design intent. With this piece of furniture, there is an intentional lack of surface detail expressed throughout the execution of the form; this omission of detail removes the distraction of decoration which ultimately allows a focus on the connection of the

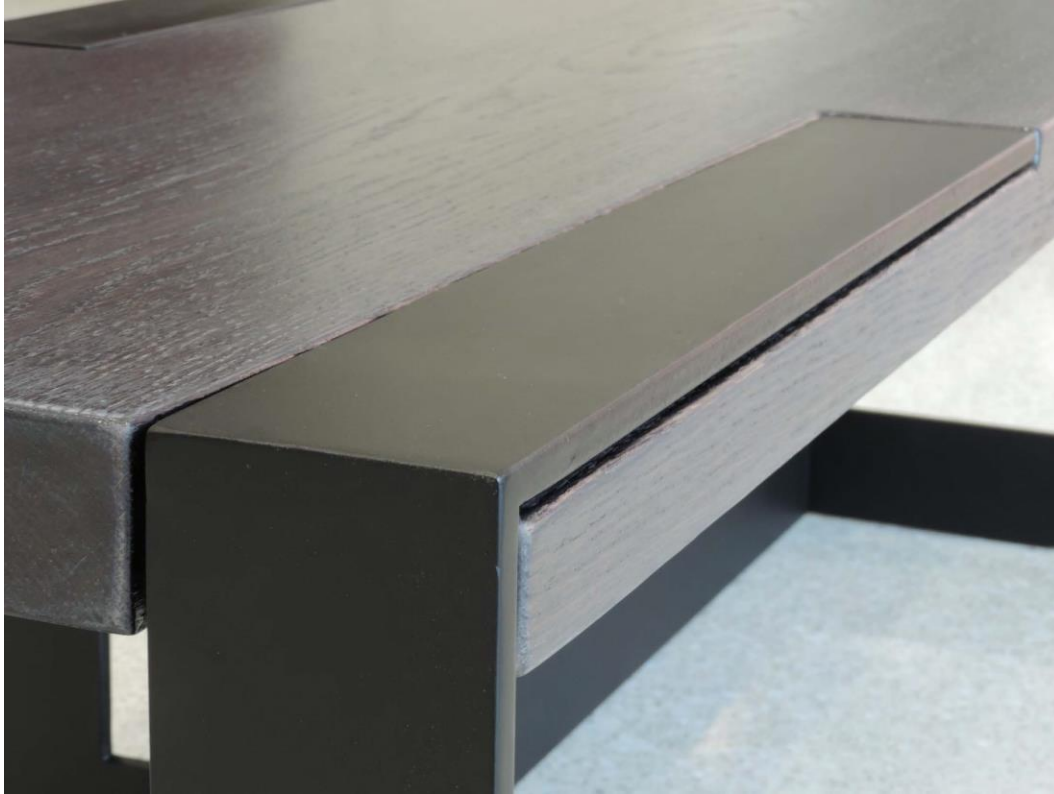
two materials. In the spirit of the Arts and Crafts movement, there is an intentional focus on a simplification of form and surface in the object so as to allow a focus on the joinery that drives the design conversation. This calm approach to surface allows the viewer to focus on the four separate and isolated moments of connection that are, upon further examination, clearly measured and intentional. The object exists as a balance of visual and programmatic forces: a simplicity of form juxtaposed against the nuanced detail expressed in the object's connections. The result is an opportunity for a balanced visual understanding of the object: it creates intensity without distraction, intrigue without deception, dominance without heavy-handedness, and calmness without boredom.













Performative Curtaining

Deborah Schneiderman, Professor, Pratt Institute

Annie Coggan, Adjunct Associate Professor, Pratt Institute; Principal at Coggan + Crawford Architecture
+ Design in Brooklyn, NY

Abstract

Issue/Context The Performative Curtaining Project intends to correct architecture and create better interiors. Historically curtains are understood to control light, provide privacy, and mend construction by blocking gaps.¹ The advent of the modernist plate glass window required curtaining to further “right” architecture. Picture windows in American tract homes were situated for façade symmetry, but generated interiors that were imbalanced and difficult to inhabit, curtaining was employed to correct these issues.² The advent of glass towers with floor to ceiling glazing further exacerbated this problem. Performative Curtaining addresses and rectifies issues caused by large expanses of glass as well as obstructions by HVAC systems. Additionally, analysing curtaining’s historically performative role questions issues of home goods consumption. **Method** Performative Curtaining expands on Petra Blaisse’s critical curtain research.³ The project develops a taxonomy of conditions that address the pragmatics of drapery via analogue and digital methods. Through prototyping, we test pedestrian ideas of domesticity and create new textile based interiors. Fabrication methods encompass, hand and machine sewing, smocking, folding, pleating, and embroidery. Materials comprise woven, knit, and felted textiles, as well as conductive thread, photovoltaics and smart textile assemblies. Typologies to date include Retractable Curtaining, View/Furniture Curtaining, and Illuminating Curtaining. Retractable Curtaining is intended to meet existing conditions, resolve issues caused by HVAC systems, respond to climate, frame views, and correct overexposure due to large glass expanses. Fabricated from 100% recycled PET felt, the curtain can be retracted vertically and horizontally to accommodate varying conditions. The curtain can be further retracted to sit above air conditioner units, baseboard heating, or

allow airflow through and open window, while still functionally remaining closed to block light or view. Alternatively, the curtains can be adjusted to thicken around the window edges, and to puddle on the floor to minimize drafts. Inner portions of the curtains retract to produce “window” openings fitted with a layer of solar screen. View/Furniture Curtaining further expands curtaining’s function to incorporate decor and furnishing. The prototype, fabricated from heavy-weight canvas, contains a series of 8” x 8” openings. The openings are reinforced with rigid 100% recycled PET felt surrounds equipped with magnetic snaps for the attachment of functional inserts. The systematized inserts, through folding operations, can perform three functions (shelf, pocket, open view portal) or be removed entirely. Such curtains, reorganize the large expanse modern glass residential tower while simultaneously minimizing additional furnishing requirements hence reducing consumption. Illuminated Curtaining increases the curtain’s responsibility. In evening it provides a soft atmospheric illumination over a window opening while during the day it functions a contemporary roman shade. The curtains multitask incorporating light and shading, hence reduce consumption of consumer goods. The prototype is constructed from heavy weight canvas which is substantial enough to support the organza lanterns that contain LED lighting embedded within the textile. Further prototyping of all Performative Curtaining typologies will incorporate photovoltaics and conductive thread to power lighting within the inserts and charge and operate mobile devices. Outcome The Performative Curtaining prototypes provide context for window treatment beyond the decorative, adapting to frame views, and compressing and expanding to meet changing spatial and climatic conditions. In combining the tasks of decorative and functional objects (lights/curtains, frames/curtains, shelf/curtains), the Performative Curtaining prototypes implement an edited cohesive environment.

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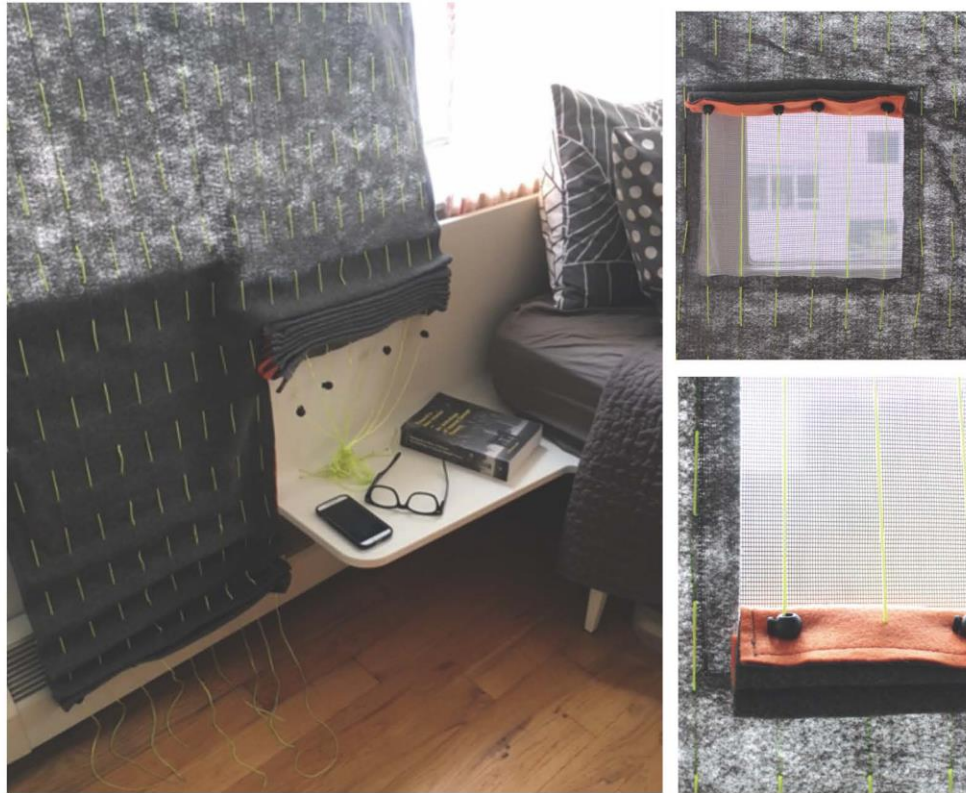
Grier, K. *Culture and Comfort: Parlor Making and Middle-Class Identity 1850-1930*, Smithsonian, Washington DC, 201

Petty, M.M. “Curtains and the Soft Architecture of the American Postwar Domestic Environment,” *Home Cultures* Vol. 9, issue 1(2012): 35-56.

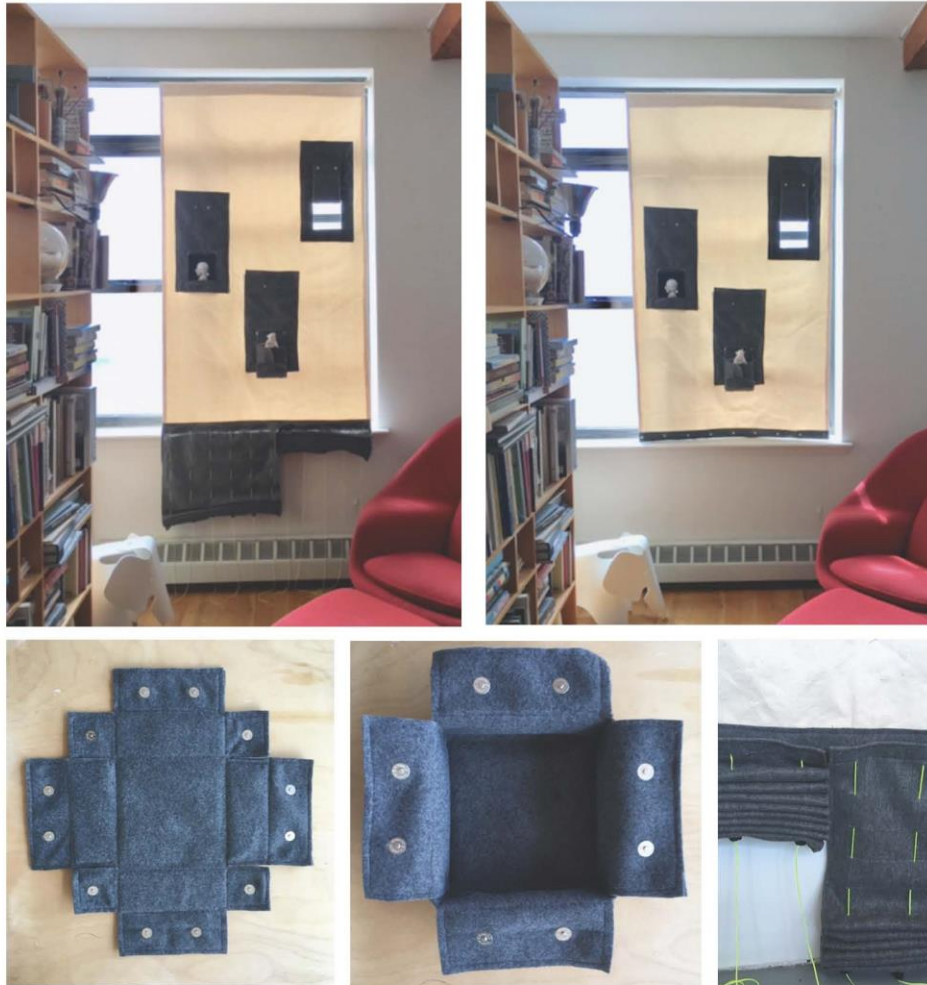
Blaisse, P. “Curtain as Architecture: Casa Da Musica, Porto,” in *Inside Outside Reveiling*, Nai Publishers, Rotterdam.



01. *Performative Curtaining* process studies



02. Retractable Curtaining detail views



03. *View/Furniture Curtaining* with retractable module, without retractable module, details



04. *Illuminating Curtaining* in situ and lantern details

Popform

Igor Siddiqui, Associate Professor, The University of Texas at Austin

Abstract

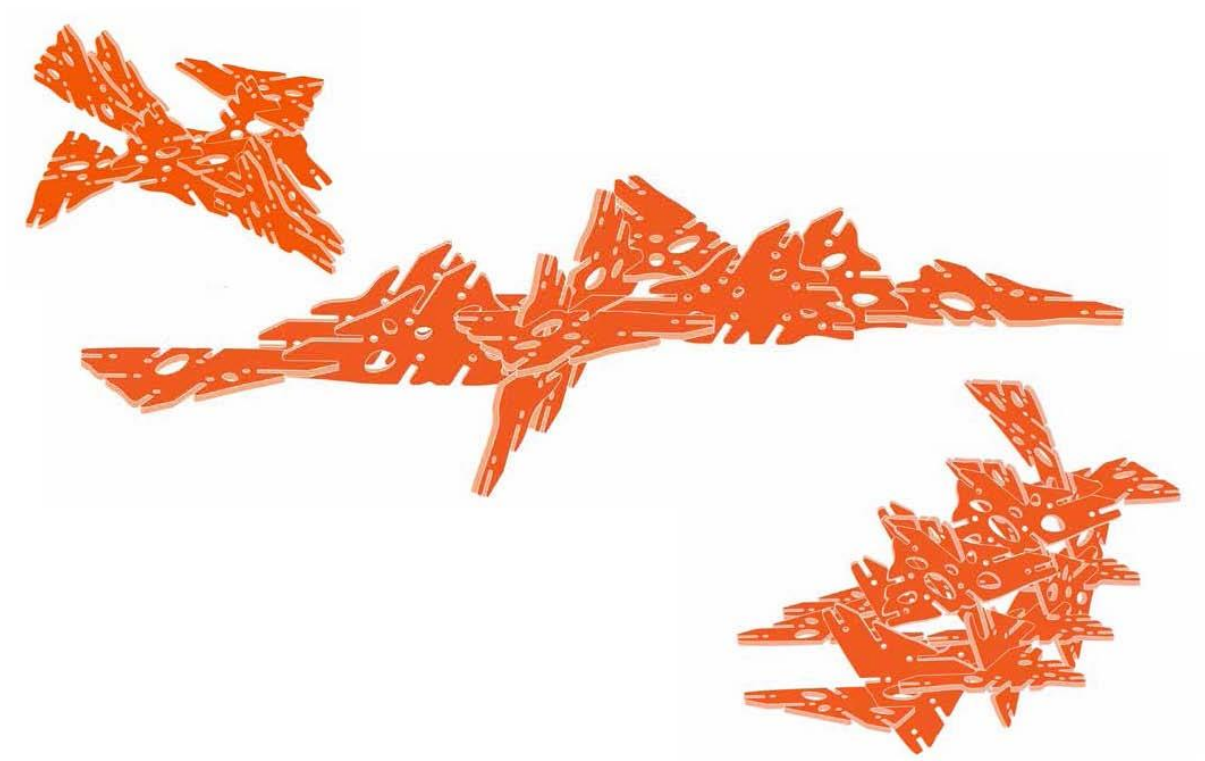
Popform is a construction game designed for participants of all ages. It consists of over 300 pieces made to be connected to one another, resulting in three-dimensional arrangements that can vary in overall size, shape, and complexity. Each bright-orange piece contains eight tabs as possible connections to other pieces; where and how they can interconnect provides the overarching structural logic – and the only pre-established rule – of the game. Two pieces alone are capable of producing 84 different combinations, and the capacity for multiple arrangements grows exponentially as more pieces are engaged. Participants are invited to play with Popform by exploring different arrangements, discovering the system's underlying logic, and collaborating with one another. The pieces are sized, shaped, and detailed to be easily handled by participants of all ages, and the physical method of assembly is designed to be intuitive and direct. While the individual pieces of Popform are structurally interchangeable, the exact shape of each piece is unique. Those who play the game or observe the resulting constructions will notice the slight differences in curved edges and round perforations throughout. In this way, Popform embodies some of the properties of repetition and variation that are found in nature. Designed and fabricated using digital processes, Popform also reflects a preoccupation with serial difference and mass-customization, contemporary themes particularly relevant for the fields of industrial design and architecture. Popform is made from 100% domestically produced post-consumer recycled HDPE plastic that is fully recyclable. It is durable and intended for outdoor use over a five-year period. Popform was commissioned by a contemporary art museum as a focus of monthly public programs that takes place in a lushly landscaped sculpture garden. As a client, the museum identified the designer based on their affinity for digitally driven design innovation inspired by processes found in nature realized through

sustainable material and fabrication methods. The presentation cover in detail the design process, the collaborative processes throughout the project, and the final outcomes that include public participation.



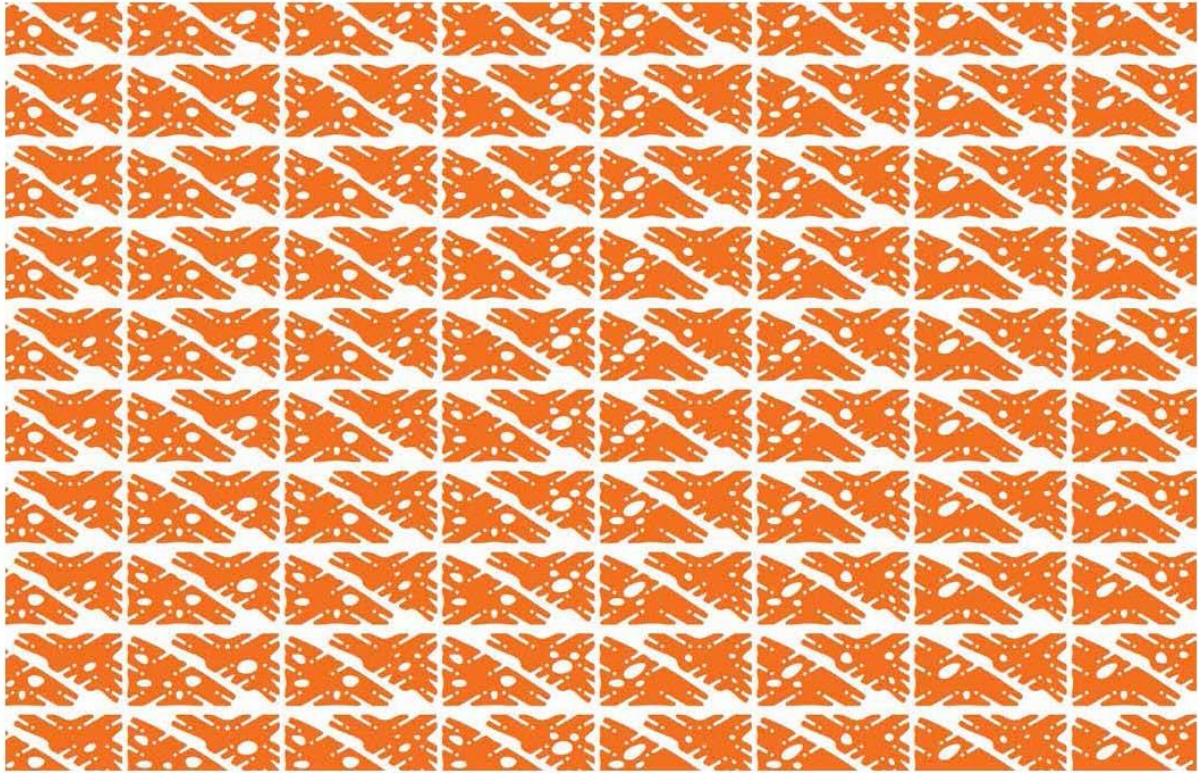
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popform



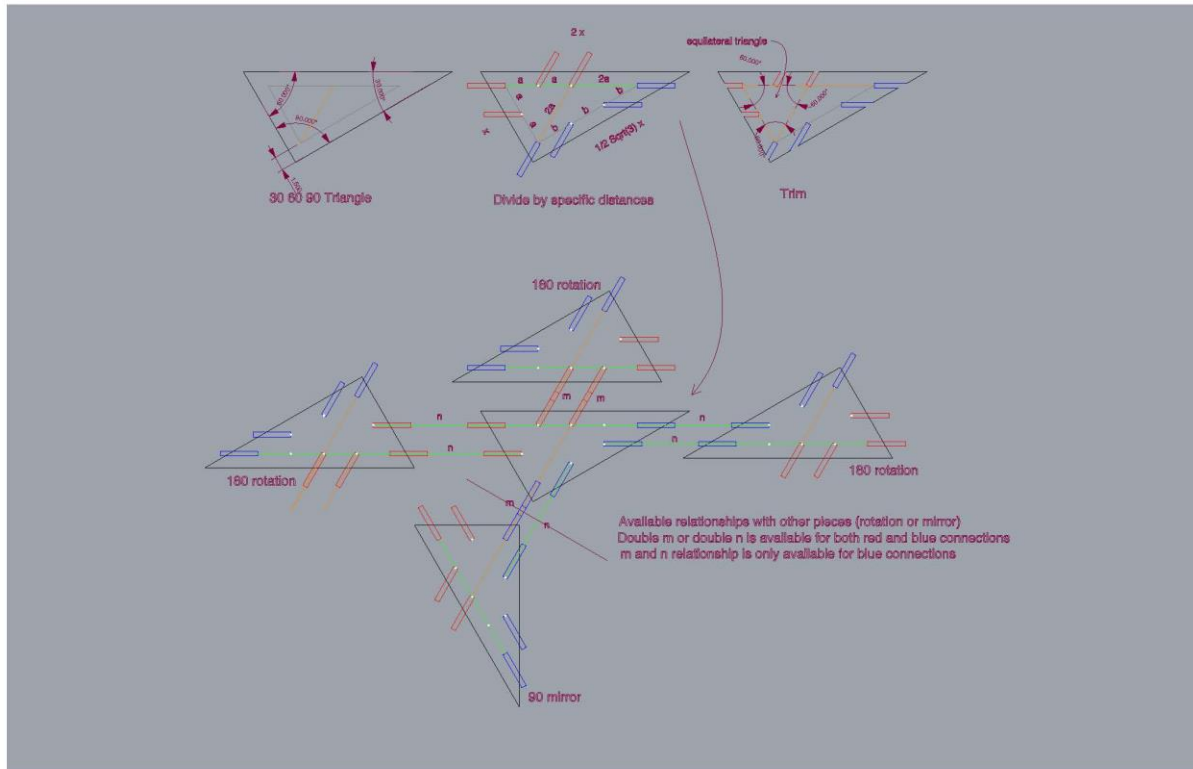
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popform



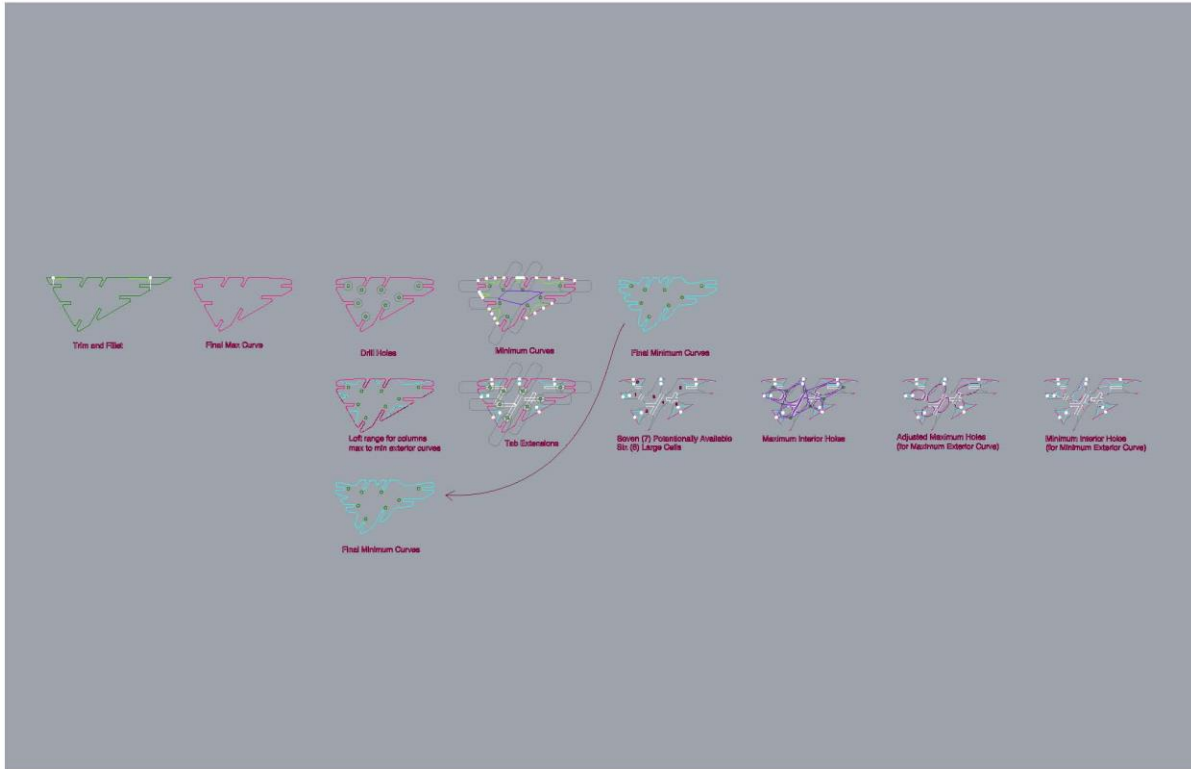
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popform



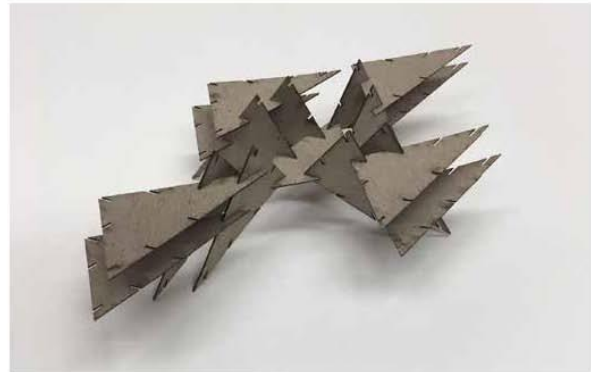
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popform



popform

Diagrams that explain the development of geometry.



Early scaled study models testing out various component geometries.

popform



Prototype tested on the site and rules of the game are explored (prototype is fabricated from green plastic, the final set is in orange).

popform



Popform is made from 100% domestically produced post-consumer recycled HDPE plastic that is fully recyclable. It is durable and intended for outdoor use over a five-year period.



popform



Popform was commissioned by a contemporary art museum as a focus of monthly public programs that takes place in a lushly landscaped sculpture garden.



popform



The project was launched this month and new documentation of the public's interaction with the game is starting to come in through social media and other channels.

popform

robotic printing

Jonathon Anderson, Assistant Professor, Ryerson University

Abstract

On a global scale, cross-disciplinary research to leverage the full potential of digital fabrications and applications of robotics are at the forefront of architectural design. Design researchers and creative scholars are increasingly investigating integrated design and robotic control methods for applications in on-site digital fabrication and bespoke digital prefabrication, to reimagine the possibilities of interiors, architecture, and design (Anderson & Lovell-Anderson, 2018). Robotic fabrication strategically operates by “deploying minimal material for maximal geometric definition” (Gramazio Kohler Research, 2015), and as a medium, allows for the timely creation of precise and intricately crafted complex interior and exterior environments, as well as objects and surfaces. These factors combined challenge analogue and low-tech design conventions to reconsider the entire design-to-production process, where the realities of innovative processes and solutions only seem to expand (Reinhardt, et al., 2016). The presentation will introduce the hardware and software control of a KUKA KR AGILUS industrial robot and the printing process through algorithmic designs. Several projects will be presented to show how the use of a robotic arm with custom engineered end effectors (spool fed and pellet fed extruders) have the ability to export and realize the architectural potentials of robotic extrusion beyond traditional additive fabrication processes. These digital fabrication systems are applied with traditional design methods to investigate computational craft approaches to designed objects, systems, surfaces, and interiors. Building on the principles of computational craft, robotic fabrication seeks to build on recent advancements by examining the ways in which robotic arms have come to be seen as transcending their traditional role as performers of the monotonous tasks of mass manufacturing pipelines (Gramazio & Kohler, 2008) and instead be viewed as part of the toolset available for the production of crafted and unique work.

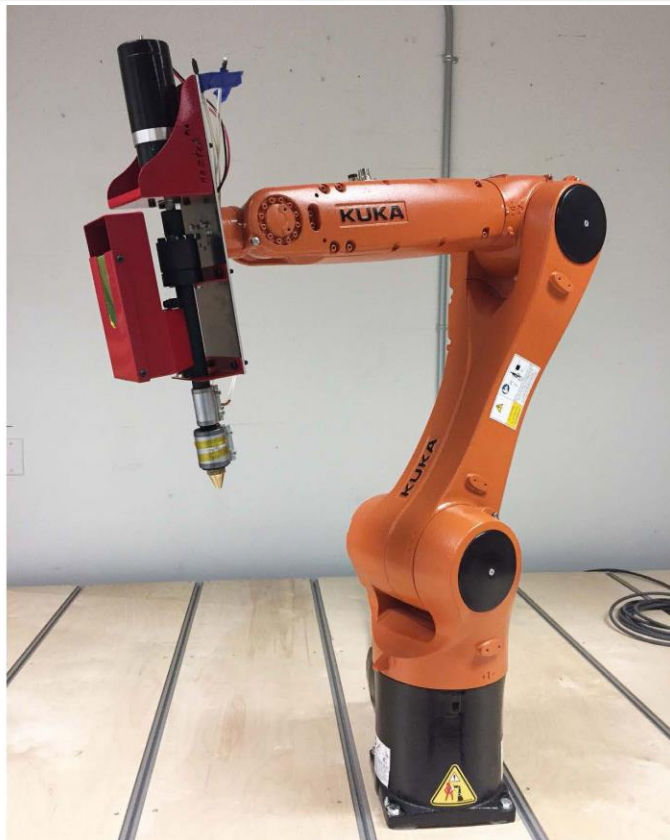
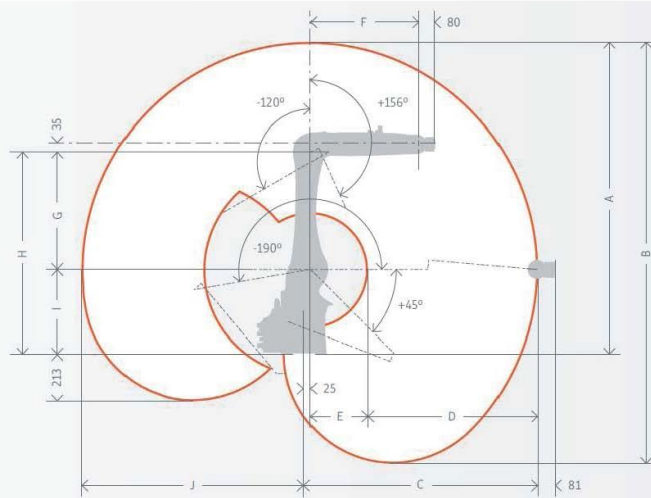
Methodology The project was designed to explore, develop, and expand the possibilities of the novel

technologies, interfaces, and methods of robotically aggregated structures. In a comprehensive investigation of the architectural potentials for robotic extruded structures, the author generated and articulated geometrically complex design through robotic programming, and translate the creative outputs as physical prototypes. This study provided insight into the relationship between computational form-finding and robotic fabrication as both a medium and a form of inquiry. Through systemic robotic fabrication as inquiry, the author: - developed algorithmic design strategies (parametric constraint models and logic) for generating complex surfaces; - test robotic workflows; - foster innovative human-machine stigmergy fabrication processes; and - apply tools and methods of robotic production to create physical prototypes.

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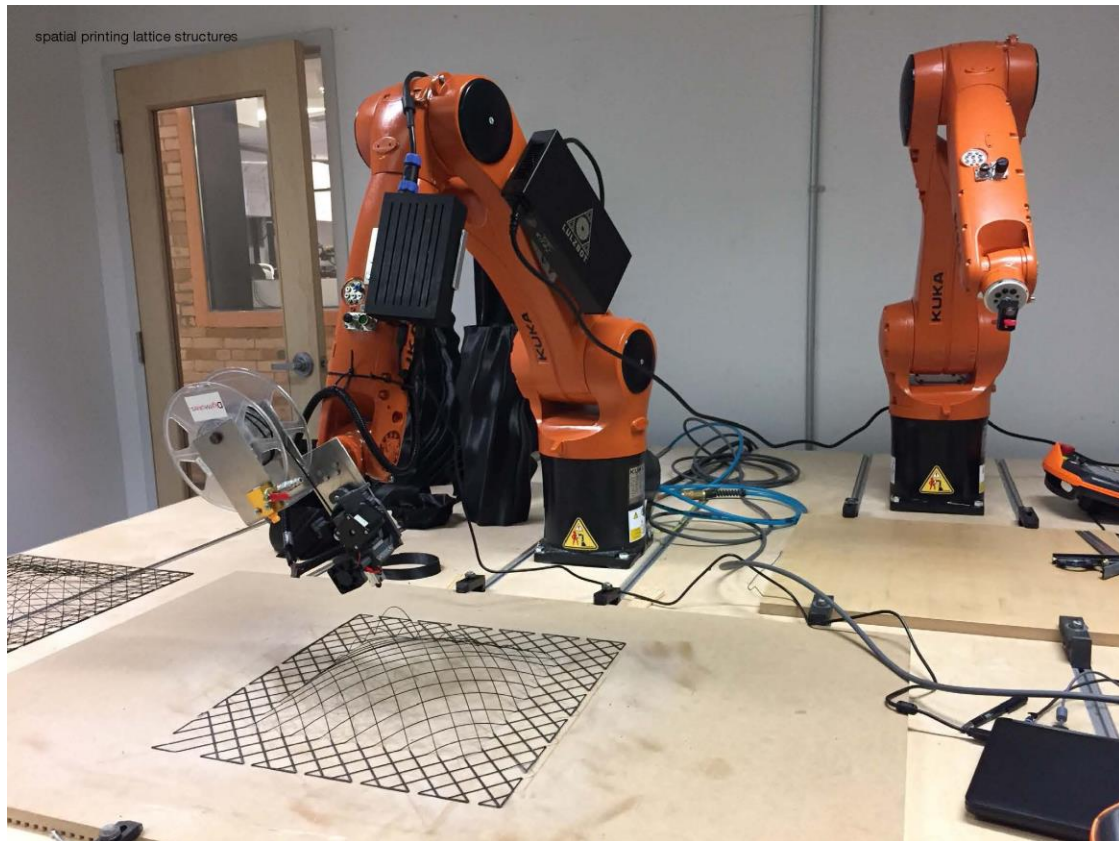
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robotic printing

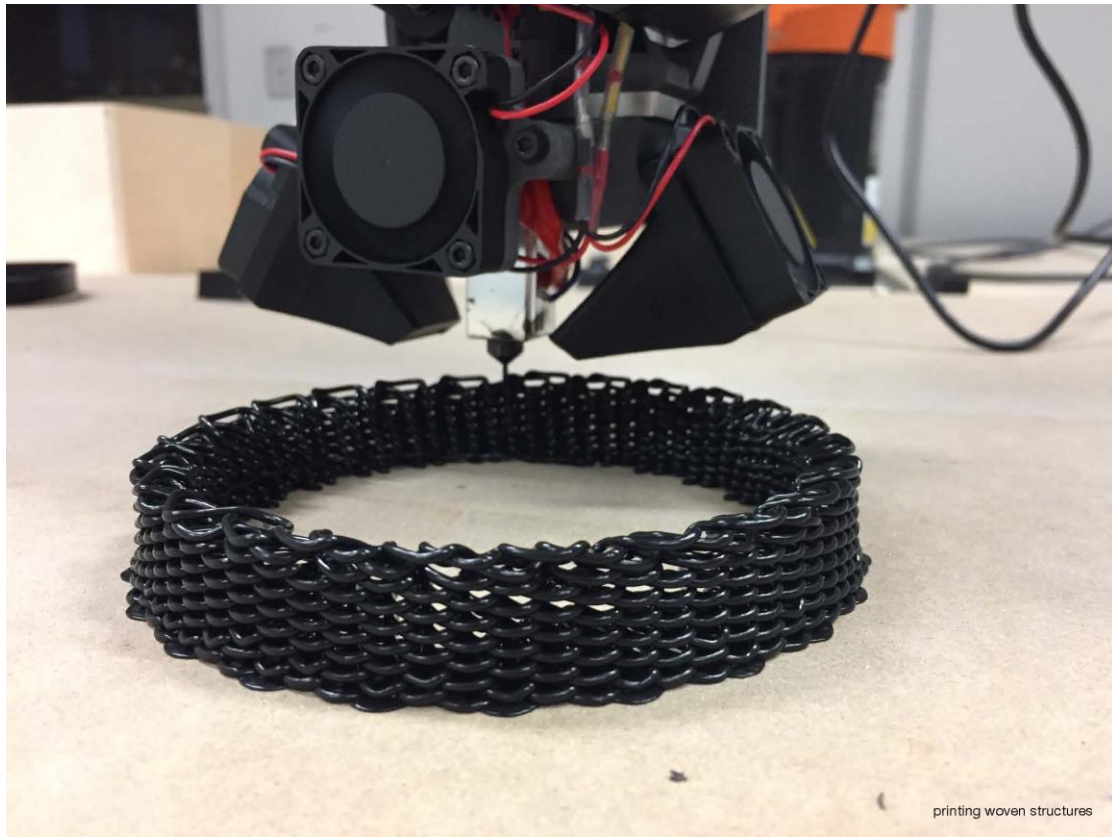


custom design and fabricated pellet fed extruder

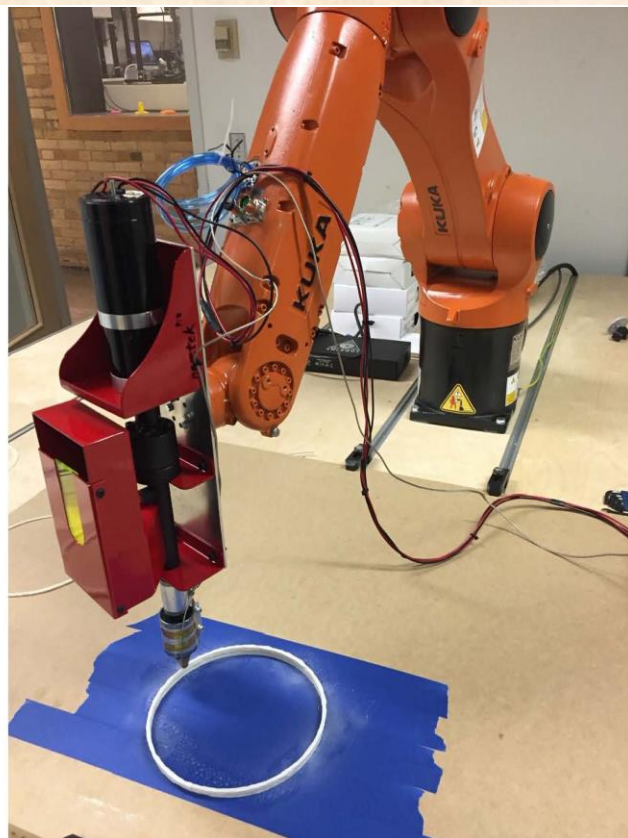




spatial printing lattice structures



printing woven structures



printing variable planar rings

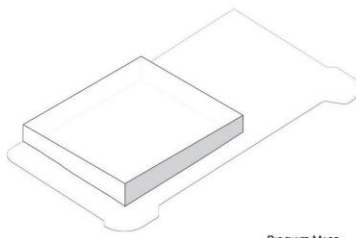
BLUEBARN Theatre

Jeffrey Day, Professor, University of Nebraska

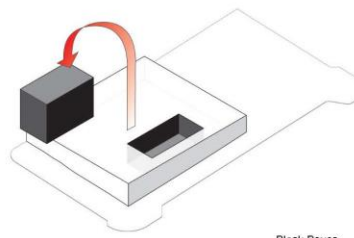
Abstract

Sharing Authorship Architecture & interior design are not fields known for shared authorship. Like filmmaking, designing buildings and interiors is an inherently collaborative practice in awe of auteurism. The preeminent awards in the discipline honor individuals not teams, and hero worship persists despite continual efforts to promote the benefits of team approaches to complex design challenges. To combat this trend (design office) pursued an alternative model for the BLUEBARN Theatre complex— a loose approach to design team structure, and a shared model of site development. On a sloping site, the team combined a 13,600 sf. facility for BLUEBARN with Boxcar 10, a 10,000 sf. restaurant / residential building and a 7,500 sf. public open space, owned by the Theatre. Though designed for separate owners, the projects share a common language and a unified site strategy including innovative storm water retention / reuse and unconventional materials. From the onset, the developers and (design office) envisioned a collective and collaborative approach to this urban environment embracing the precision programming required (theatre, restaurant, housing...) with a loose approach to team formation and project resolution (spaces and structures will transform over time). This approach freed the designers from the constant burden of authorship and allowed the ground-up project, built in one year, to appear improvisational. Thus, the architects held an open competition to select the landscape design team for the open space and opened the design team to multiple voices. Challenged to design a building to increase capacity while maintaining the risk-taking ethos of the BLUEBARN, the goal was to enact an exciting urban environment out of the highly specific / technical requirements of the theatre while promoting programmatic and material improvisation. At the core of the theatre is a 1000 sq. ft. stage and 96-seat house, a hybrid of proscenium and black box types. The BLUEBARN sought to mediate the technical and functional demands of a modern theatre, a desire for openness and engagement with the

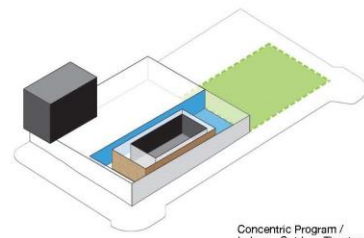
city, and the excitement of continual and unpredictable evolution. For the theatre building itself, (design office) sought a collective and collaborative approach to this urban environment embracing a loose approach to team formation and project resolution - spaces and structures are intended to transform over time through the improvisations of the theatre company. In a break with conventional practice (by which architects maintain a strong hold on design authorship) (design office) commissioned 4 artists to develop integrated functional building elements as artworks: a custom brick vestibule by xxxx; interior lighting and built-in furniture by xxxx; reclaimed wood, heavy timbers, and custom sinks by xxxx; and the very large upstage door by xxxx. The looseness is most evident in the building interiors where the work of multiple authors is expressed through material collage. Custom Standard (design office) challenged the typical American construction approach that privileges assemblies of products over formed materials. Instead, they promoted an explicit materiality and collaborated with a contractor and commissioned artists to realize materially intensive parts of the building. The most noticeable instance on the exterior is the RebarWall, a hybrid cladding system that envelops the exterior. The typical detail, welded rebar held in front of Corten sheet metal siding, transforms to accommodate special conditions around the building. The rebar both unifies and differentiates the theatre.



Program Mass



Black Boxes



Concentric Program /
Indoor - Outdoor Theater

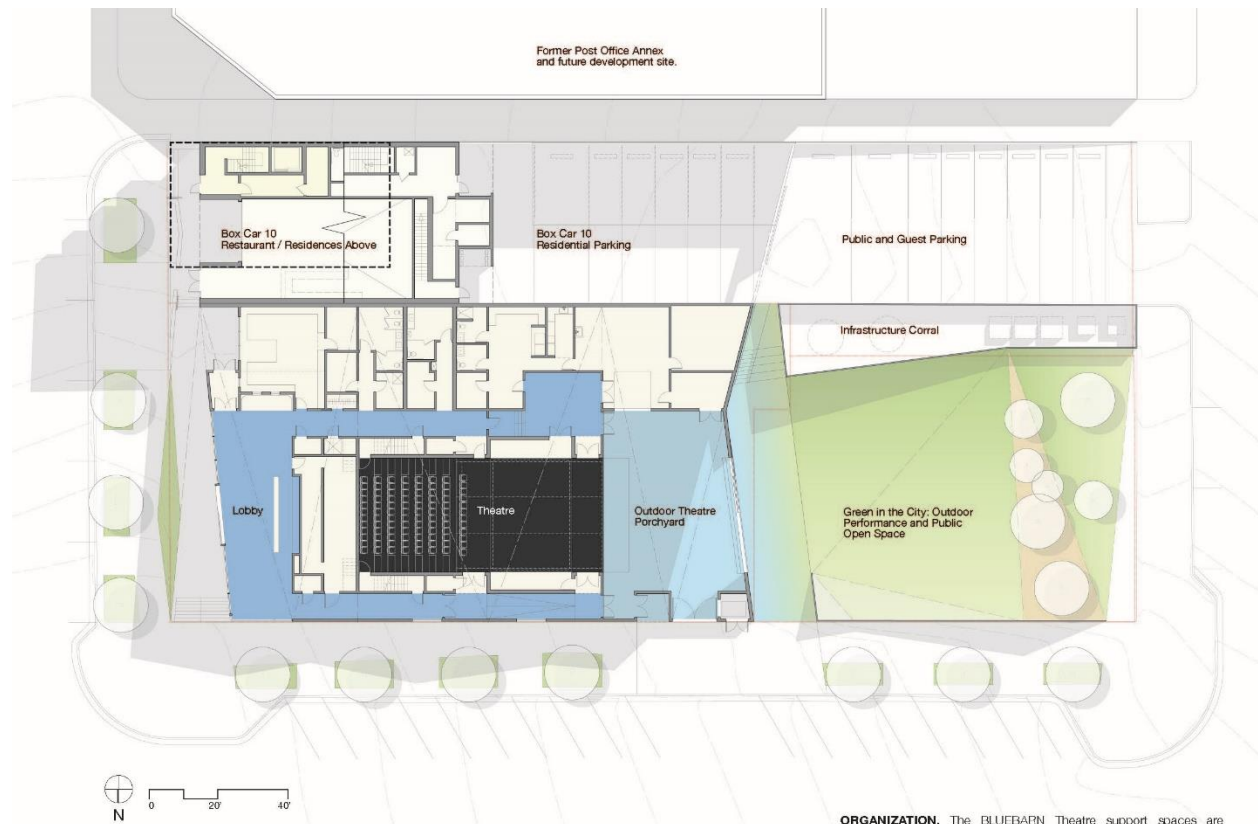


BLUEBARN THEATRE

Flexibility Without Neutrality

Conceived as a new arts hub in a rapidly changing district near downtown Omaha, an experimental theatre opens to the city through a public open space anchored with a mixed-use building. Three related projects share an integrated half-block to transform the relationship of cultural facilities and public / private space towards a collective urbanism. The ground-up construction projects appear to have been built over time.

EAST ELEVATION



GROUND FLOOR PLAN / SITE PLAN

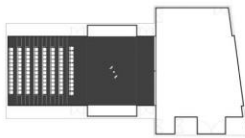
ORGANIZATION. The BLUEBARN Theatre support spaces are organized concentrically around the modified black box with the back-of-house operations arranged against the party wall with neighboring building, Boxcar 10. To supplement the BLUEBARN, the developer of Boxcar 10 has built a mixed-use building, also designed by the architects of BLUEBARN, that reinforces the arts focused neighborhood with a much needed dining spot and housing.



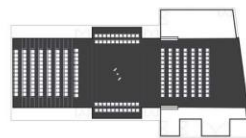
THEATRE SECTION



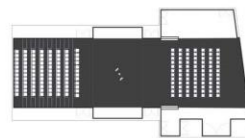
OPEN THEATRE DIAGRAM



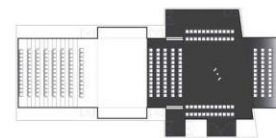
FIXED SEATING / STAGE



INDOOR / OUTDOOR ALLEY THEATRE



THEATRE IN THE ROUND



OUTDOOR PERFORMANCE

OPEN THEATRE. A very large door connects the abstraction of the theatre space (traditionally hidden from the outdoors) with the realities of the city outside. Flexibility is not perceived as neutrality or the absence of form but instead as the presence of unique and carefully considered infrastructure. This innovative layout supports a variety of theatre configurations from the conventional proscenium to the less common alley theatre and environmental theatre forms.

The ability to open the box changes the theatre's flexibility, allowing the company to stage different events and communicate with the city and neighborhood in ways that will alter the perception of the BLUEBARN itself. Where the conventional black box theatre provides opportunities for dramatic innovation inside a limited and controlled realm, new types of performances, theatrical configurations and engagement with the city and the public are now possible.

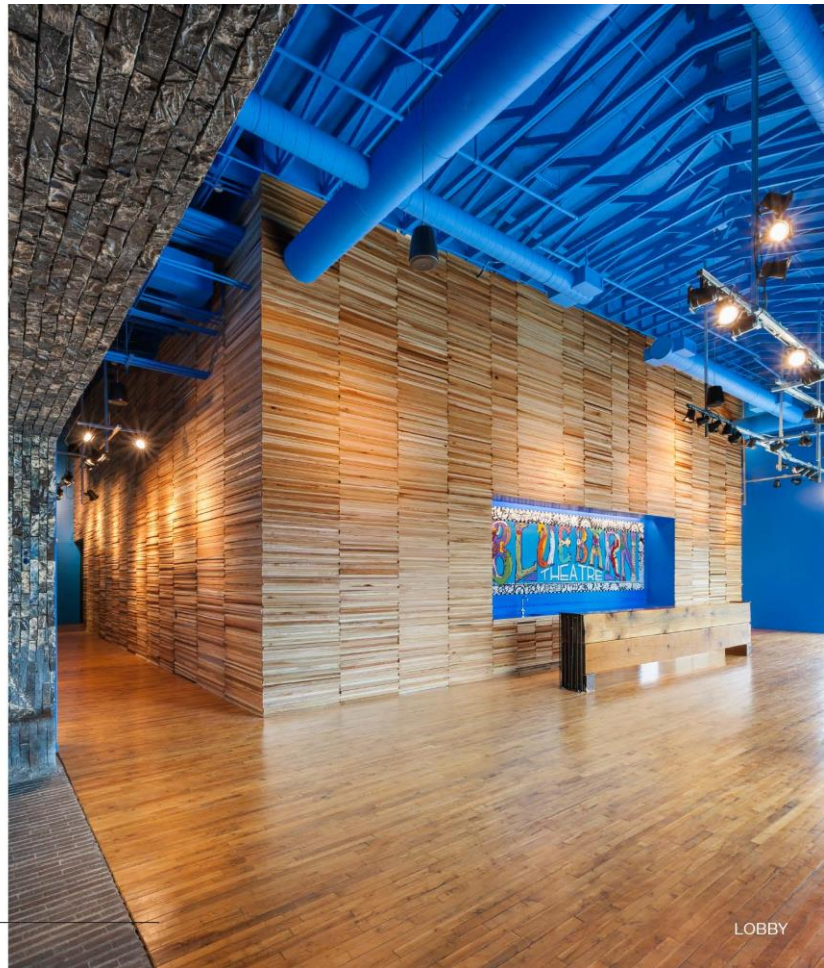
STAGING CONFIGURATIONS

INTERIOR MATERIAL EXPERIENCE. Salvaged materials applied on precise surfaces add texture and richness to the layering of spaces and thin surfaces with the black theatre at the center. Heavy timbers used throughout as furniture and structure are salvaged from storm-downed trees in the Omaha area. In an original approach to design-team formation, the architects commissioned 4 artists to create functional installations that serve the practical needs of the theatre. These images show the custom glazed brick vestibule & box office, the lobby lighting, "Stagecraft", and the bar & wood floor. This approach freed the design team from the constant burden of sole authorship and connected well with the ethos of the BLUEBARN where spaces are always being modified and the character of the theatre evolves from the continual layering of stage sets and props.

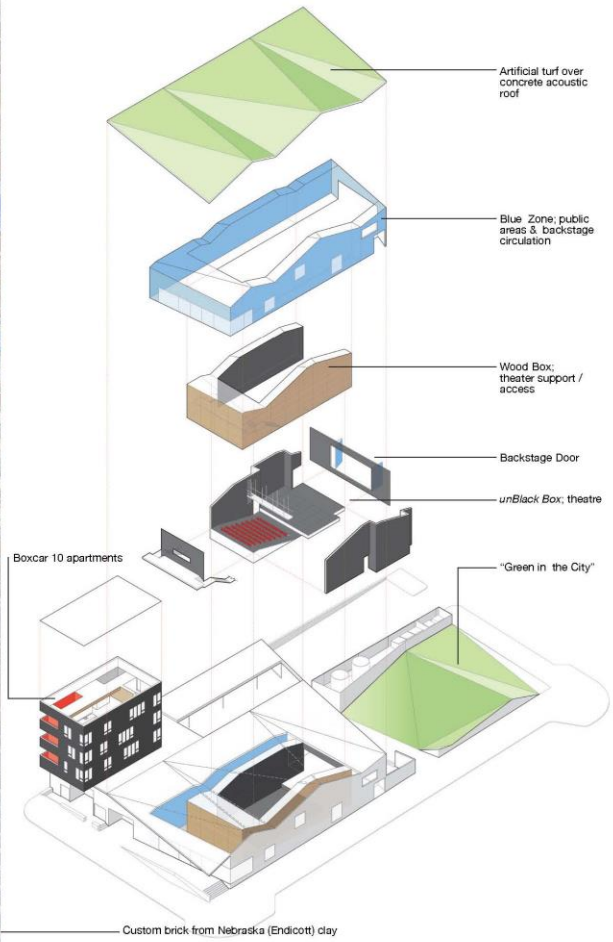
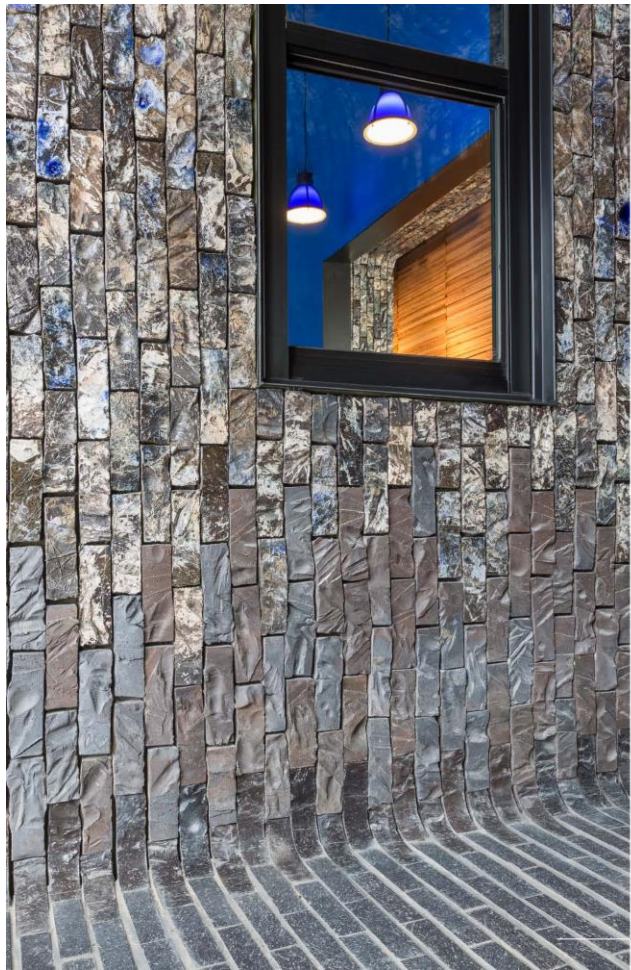


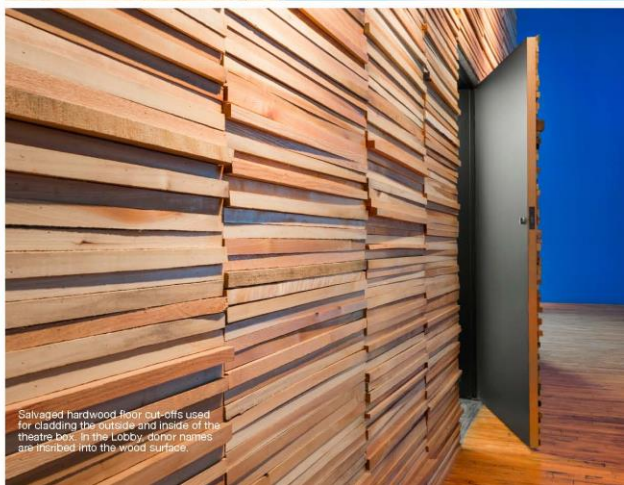
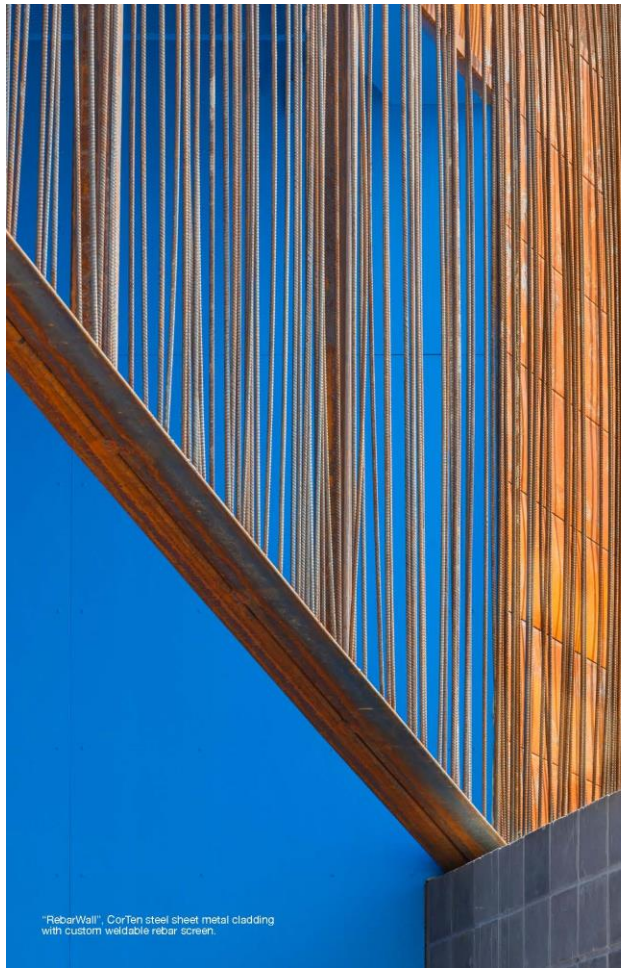
Office furniture, designed and fabricated by a commissioned artist from salvaged stage sets with Unistrut armature (similar in Dressing Room)

Salvaged wood floor



LOBBY



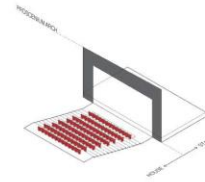




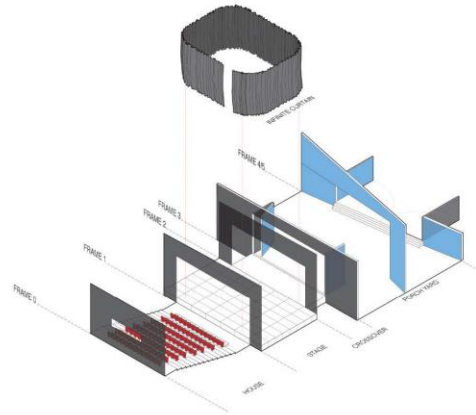
Salvaged timbers from storm-downed trees in Omaha.

Acoustic treatment from hardwood cut-offs painted black.

Re-used house seats from previous location.

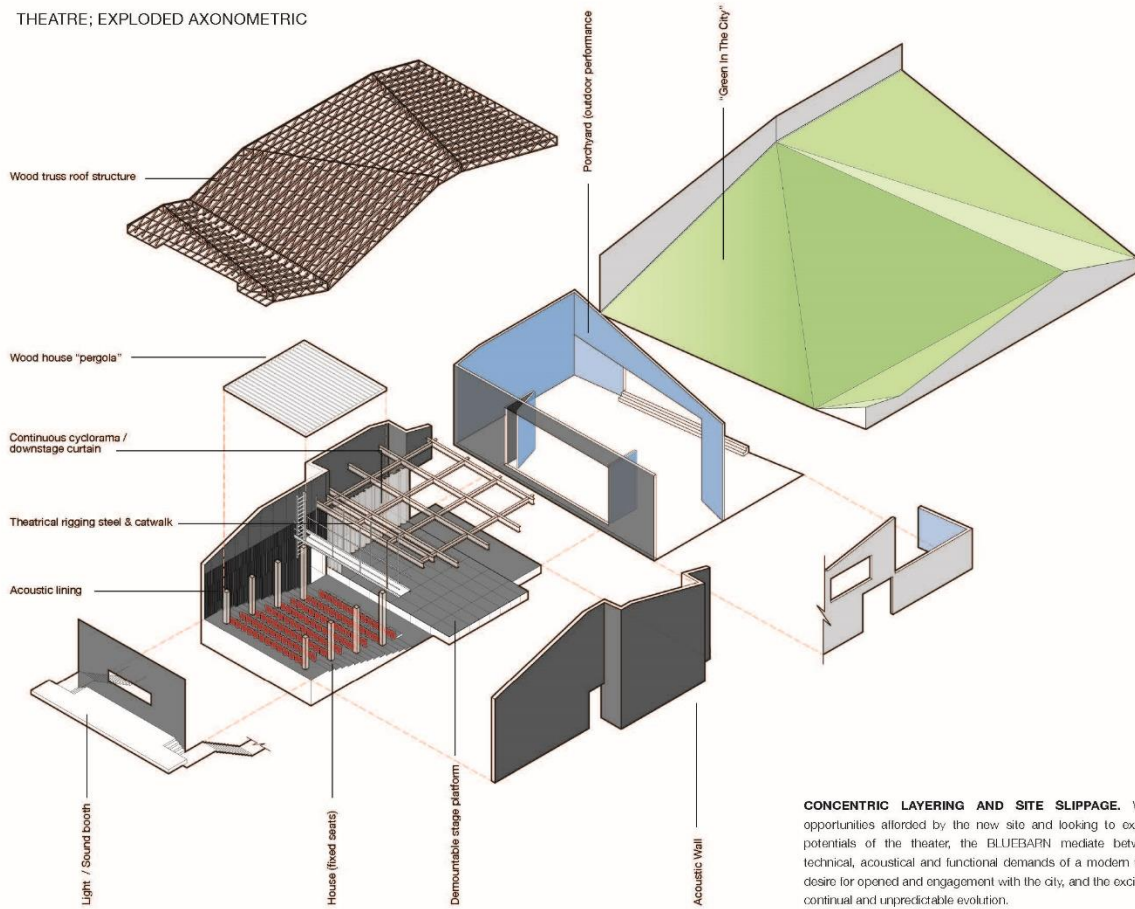


TRADITIONAL PROSCENIUM ARCH



BLUEBARN PROSCENIUM FRAMES

THEATRE; EXPLODED AXONOMETRIC



CONCENTRIC LAYERING AND SITE SLIPPAGE. With the opportunities afforded by the new site and looking to expand the potentials of the theater, the BLUEBARN mediate between the technical, acoustical and functional demands of a modern theater, a desire for opened and engagement with the city, and the excitement of continual and unpredictable evolution.



BEYOND THE BLACK BOX. The BLUEBARN reinterprets the conventional black box type. The literal blackness of the theatre interior promotes focus but the form of the space, including the fixed seating and textured wood acoustic wall system, give the theatre character not normally associated with the black box. There is no proscenium (or, alternatively, there are many layers or proscenias), but the opening between house and stage forms a precise frame proportion as desired by the company.



THE BIG DOOR; OPENING THEATRE TO PORCHYARD

CHANGING THE GAME IN HIGHER EDUCATION: Redesigning Spaces to Facilitate Creative Thinking and Collaborative Connections

Darrin Brooks, Professor, Utah State University

Daines, Mike, Assistant Professor of Graphic Design, Utah State University

Abstract

I was approached by the dean of a college ranked 23rd in the country and asked if I could offer suggestions to update their four-story building (project size@ 8,168 square feet.) I walked into the college's building and physically felt transported back into a time. I said, "If your college is ranked 23rd in the nation, the objective of this project is to make your college look like it competes in the national arena and not look like an outdated hospital." I went on to say that my research found that higher education is frequently criticized for stifling creativity. I was instantly hired. Gensler researchers recently asked the question, "Are college campuses working for students?" They reported in a research study entitled: Changing Course: Connecting Campus Design to a New Kind of Student. "The realities of on-campus spaces haven't caught up with the demands and aspirations of today's students. They don't find on-campus spaces effective or inspirational, and campus design isn't enhancing their experience by promoting neighborhood or student-faculty connections." This new design would launch the college visually and inspire all who enter the space. This design took bold risks and required client trust. Traditional school colors were not featured. The goal was to create a bold energetic environment that would provide increased efficiency for users of the space. A major design goal was to increase conversation, collaboration, and communicate wayfinding into the overall design. This project was an adventure in exploring materials that would stimulate the students and faculty. For example wallcovering with raised letters and symbols were installed throughout the space and on two of the three sky bridges suggesting creative thinking. The flooring and carpet patterns were bold and dramatic. I suggested that we also retain the services of a graphic design educator to design wayfinding, signage,

and also integrate graphics into the overall design. This resulted in a dynamic collaboration. We worked closely to unify the new interiors with signage and wayfinding. From the design of the elevators to the design of the stairway murals, this building has a new reputation for being the hip destination on campus. The design is un-institutional on purpose. The signage and wayfinding dovetail with the interiors to create a solution that is both practical and charismatic. All finishes and materials were selected to meet performance standards and also to be sustainable. One example is that we installed the new luxury vinyl faux wood flooring over the existing tile. This saved time, waste, and money. Every space was designed to be flexible for all users. We used visual communication to aid in navigation for users that may need help finding their way through a massive four-story building. The Dean provided this response. "It has been amazing to see the increased use of the atrium space by students in the College. The vibrant colors, unique lighting, and inviting furniture and study spaces attract students to a degree we haven't seen before. The outstanding and cohesive design of the space has ensured that every day the atrium is used extensively by students to study, to rest, to have conversations with peers, and to confer with faculty. The wayfinding graphics are modern and fresh and consistent with the overall color scheme. The new signage is visually appealing and has reduced confusion about department and office locations for students unfamiliar with the layout of the education building."

References

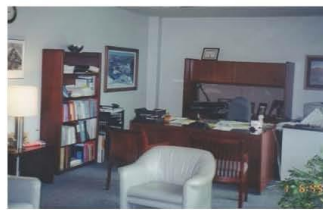
<https://www.gensler.com/research-insight/gensler-research-institute/education-environments-index-student-survey?q=Student%20experience>

BEFORE IMAGES: COLLEGE OF EDUCATION

ATRIUM

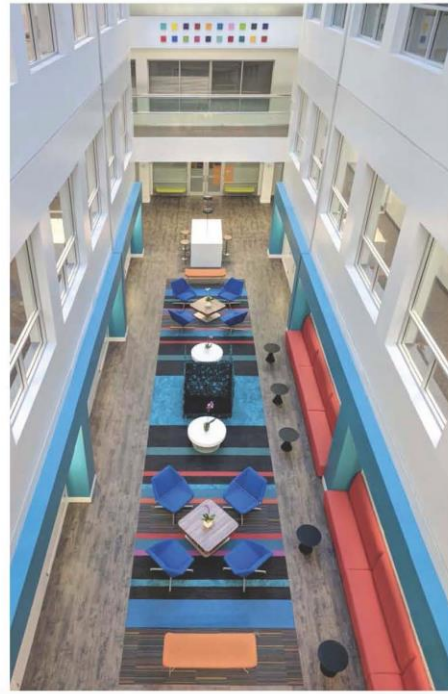


DEAN'S SUITE



Overall floor plan of the building, showing the layout of the various rooms and their connections. The plan is not to scale.





PLEASE SELECT THIS
HYPERLINK TO SEE THE NEWLY
REMODELED ATRIUM

SIGNAGE & WAYFINDING ALL BECOME ELEMENTS OF THE DESIGN







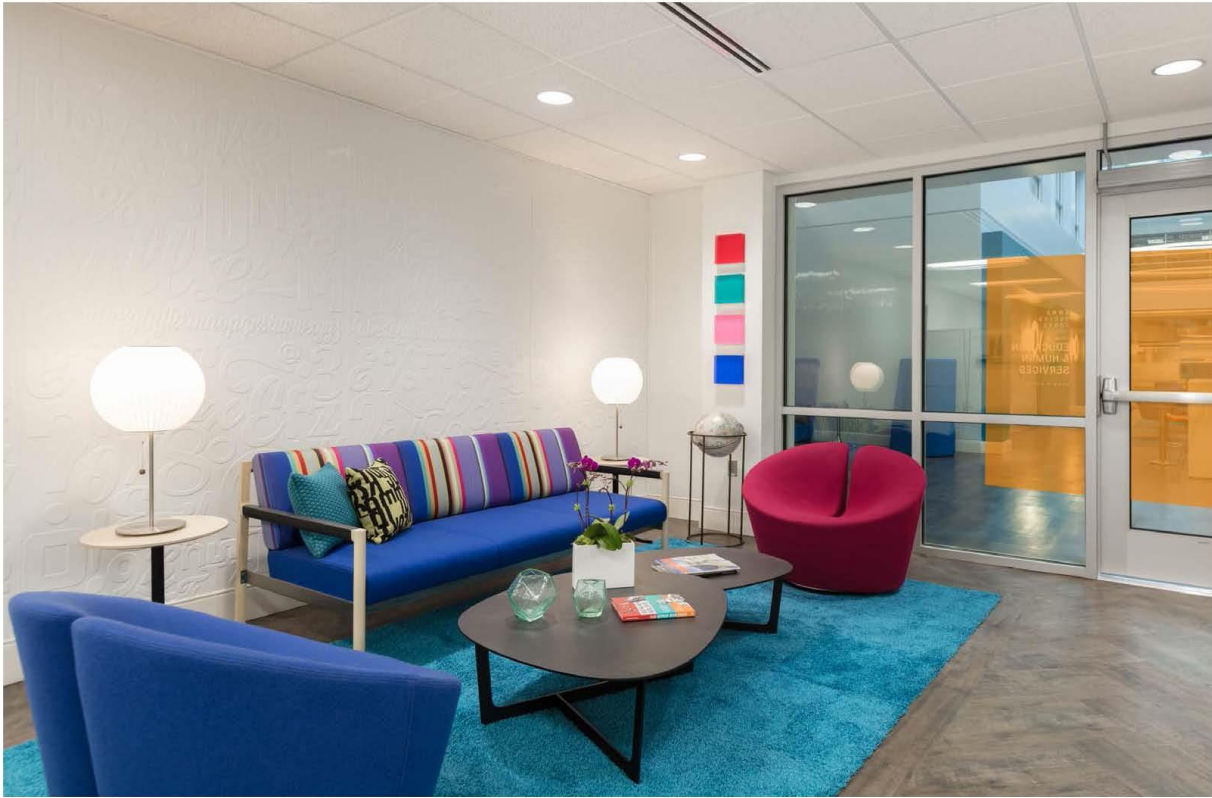


COLLEGE OF EDUCATION DEAN'S SUITE



COLLEGE OF EDUCATION DEAN'S OFFICE

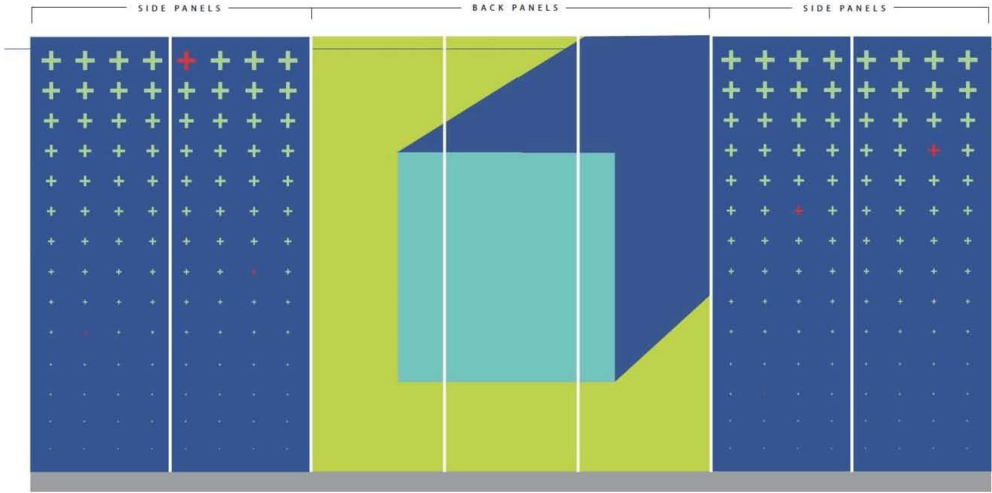
COLLEGE OF EDUCATION DEAN'S SUITE- WAITING AREA



ELEVATOR SEQUENCE



ELEVATOR
INTERIOR



EXTERIOR BEFORE DAY & NIGHT PHOTOS
Two Staircases with Glass Windows

**STAIRWAY
GRAPHIC
MURALS**

**EDUCATION
BUILDING**



BEFORE-DAY



BEFORE-NIGHT



F22 Foto Space

Jason Carlow, Associate Professor, American University of Sharjah

Otto Ng, Lecturer, University of Hong Kong; Principal, LAAB

Abstract

The political situation of Hong Kong and its precarious relationship to China has shaped an outspoken generation of young activists and artists. Through the innovative combination of cultural, commercial and social spaces in one venue, the interior design of the F22 Foto Space provides the city of Hong Kong with a new institution to develop and promote young talent and cultural identity in a society under threat. The Hong Kong government has been attempting to improve the city's arts and culture industry for some years with the development of a World Class Museum (M+) by Swiss architects Herzog & de Meuron and attracting world class events such as Art Basel. However, the infrastructure for the development of local arts and artists remains thin when compared with other global art centers. According to author, Madeline Gressel, "despite being the third largest auction market in the world, the city is lambasted, often and loudly, for its lack of sophistication and cultural vacuity. Therein lies the cultural paradox: its focus on big hits and big profits doesn't always create fertile ground for homegrown talent." F22 is conceptualized as an incubator for "homegrown" talent that is stealthily built into the high-rise, commercial fabric of the city. Located within adjoining floors of an office tower above the bustling streets of the Causeway Bay district in Hong Kong, the F22 Foto Space is a gallery and cultural hub for the exhibition and incubation of photography and design. The space includes a flexible event and gallery space, a bookshop, office space for curators, a photo archive room, a café, a conference room and lounge for meetings and events. The project is an interior design for the adaptive reuse of a former night club and commercial office space. The focal points of the design include a circular stair that connects the two floors of gallery space and a rotating entry door in the form of a camera lens. The twisting bars of the stair's balustrade create a moiré effect and elegantly curve inward to blend into

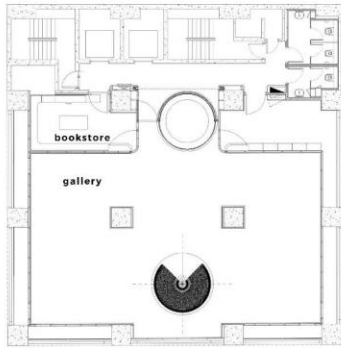
each of the stair treads. Inspired by camera aperture, the circular staircase plays with light, shadow and speed. The overall structure creates a play between transparency and opaqueness that evokes the medium of photography and creates a unique backdrop for events. Like early camera bodies and lenses, the spiral stair and entry door are fabricated from brass and then painted with black. Like vintage cameras, over time the black paint will wear off, revealing the brass underneath. Other notable features of the space include a hidden bookshop that disappears behind a display wall and a coffee bar that offers a gathering place for informal events and a meeting point for cultural activities. The two galleries on upper and lower levels are designed in black and white, forming a dialogue between the two floors. The choice of materials and detail design of architectural elements within the space inseparably link the institution to the medium of photography and the socio-political circumstances which photographic art can address.

References

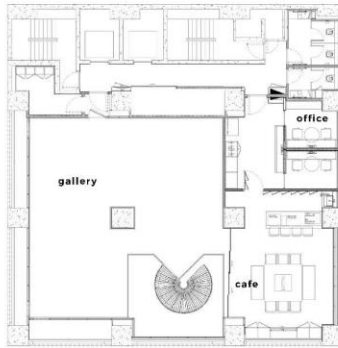
Gressel, Madeline. <https://www.scmp.com/lifestyle/arts-culture/article/1407716/four-young-artists-show-critics-hong-kong-culture> (Accessed September 10, 2018)



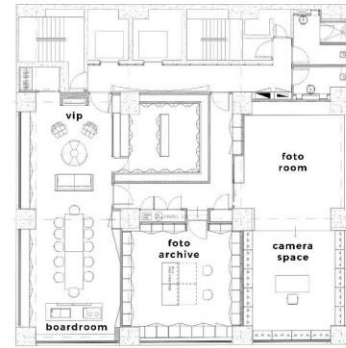
f5



f6



f7



Floor Plans at levels 5, 6 and 7 of a typical Hong Kong office tower. (Above)

Signage on the exterior of the office tower projects the institution to pedestrians at street level and automobiles on an adjacent elevated highway. (Right)

f22 foto
space





f22 foto
space

Entry Door
(Exterior left and interior right)



To create a cinematic entrance, the design team studied camera development and used design elements from various generations of camera lenses to design the door. The aperture in the ceiling above the door is a lighting feature that controls the amount of light at the entrance space.



The base of stair is inscribed with a pattern that references a camera shutter mechanism and the details and mechanical connections of the stair are also modeled on the parts of a Leica camera body.

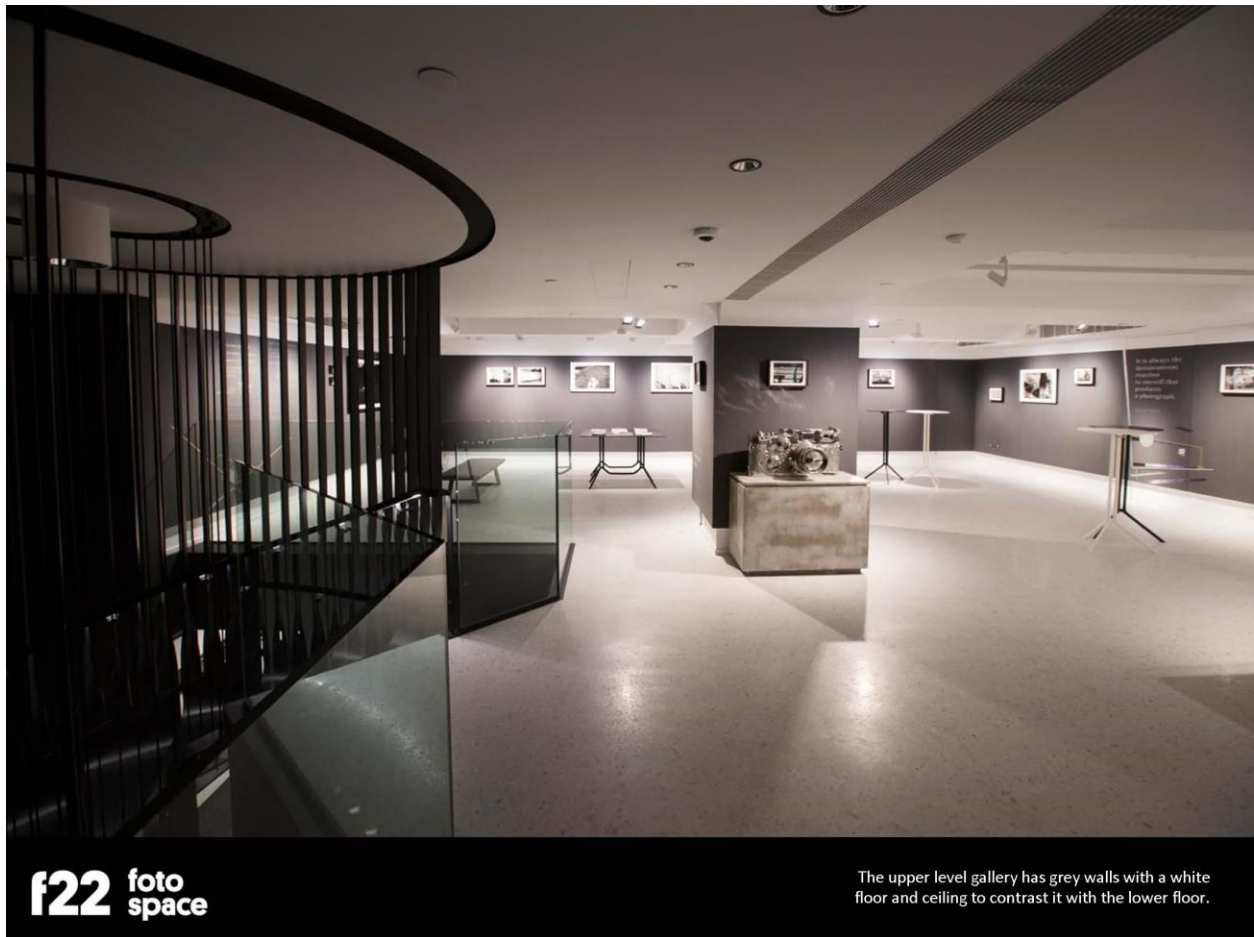
f22 foto
space





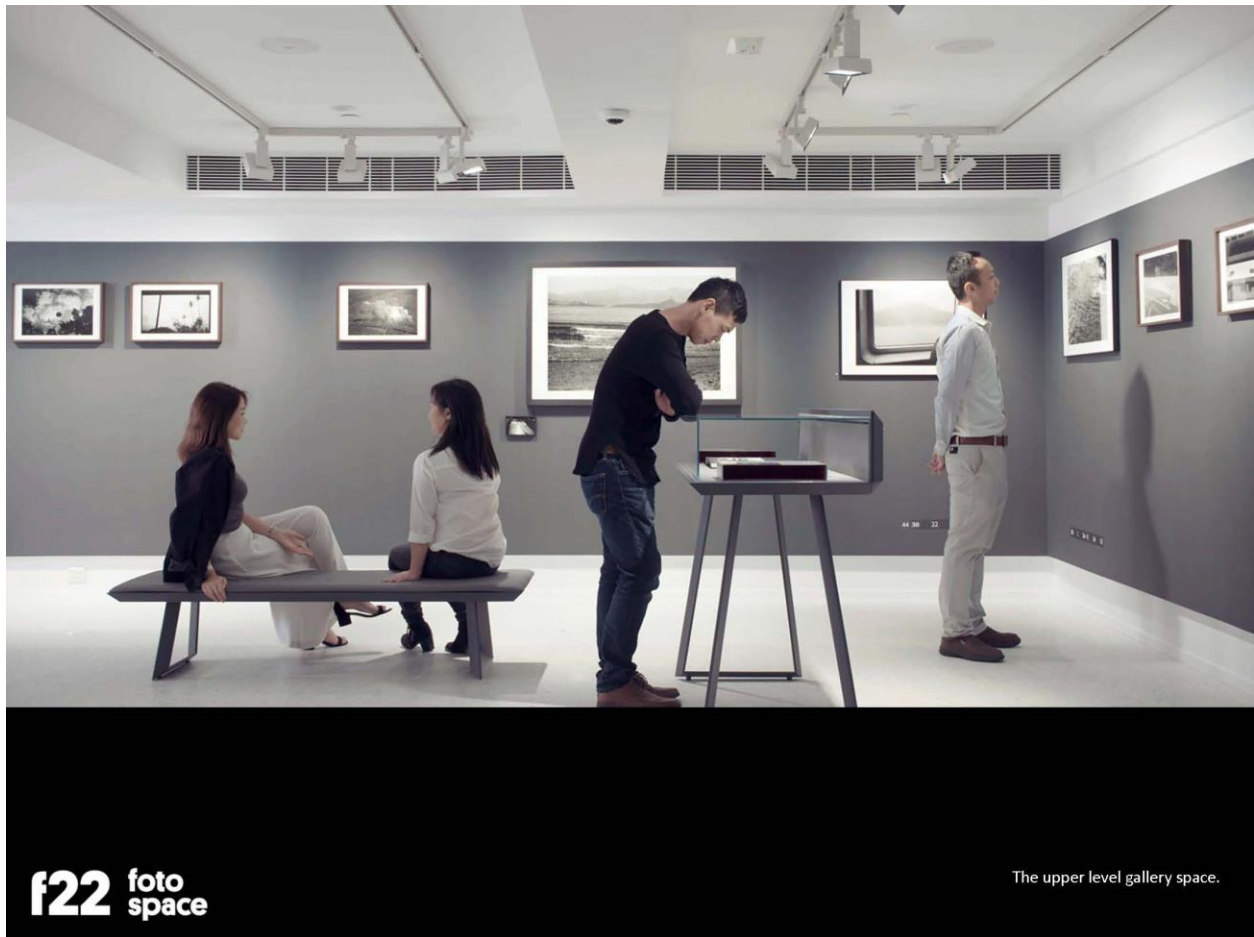
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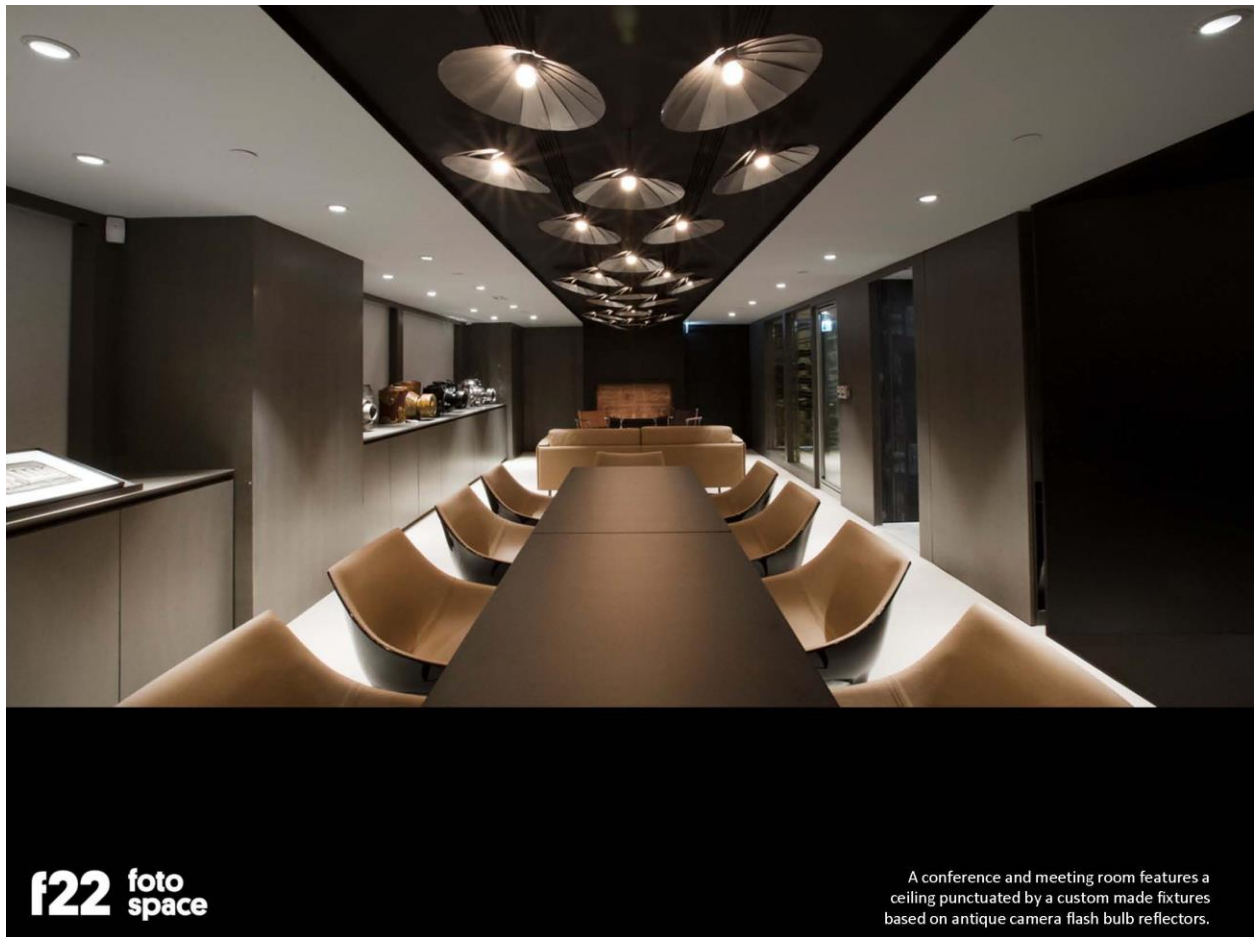
View downward through center of staircase



f22 foto
space

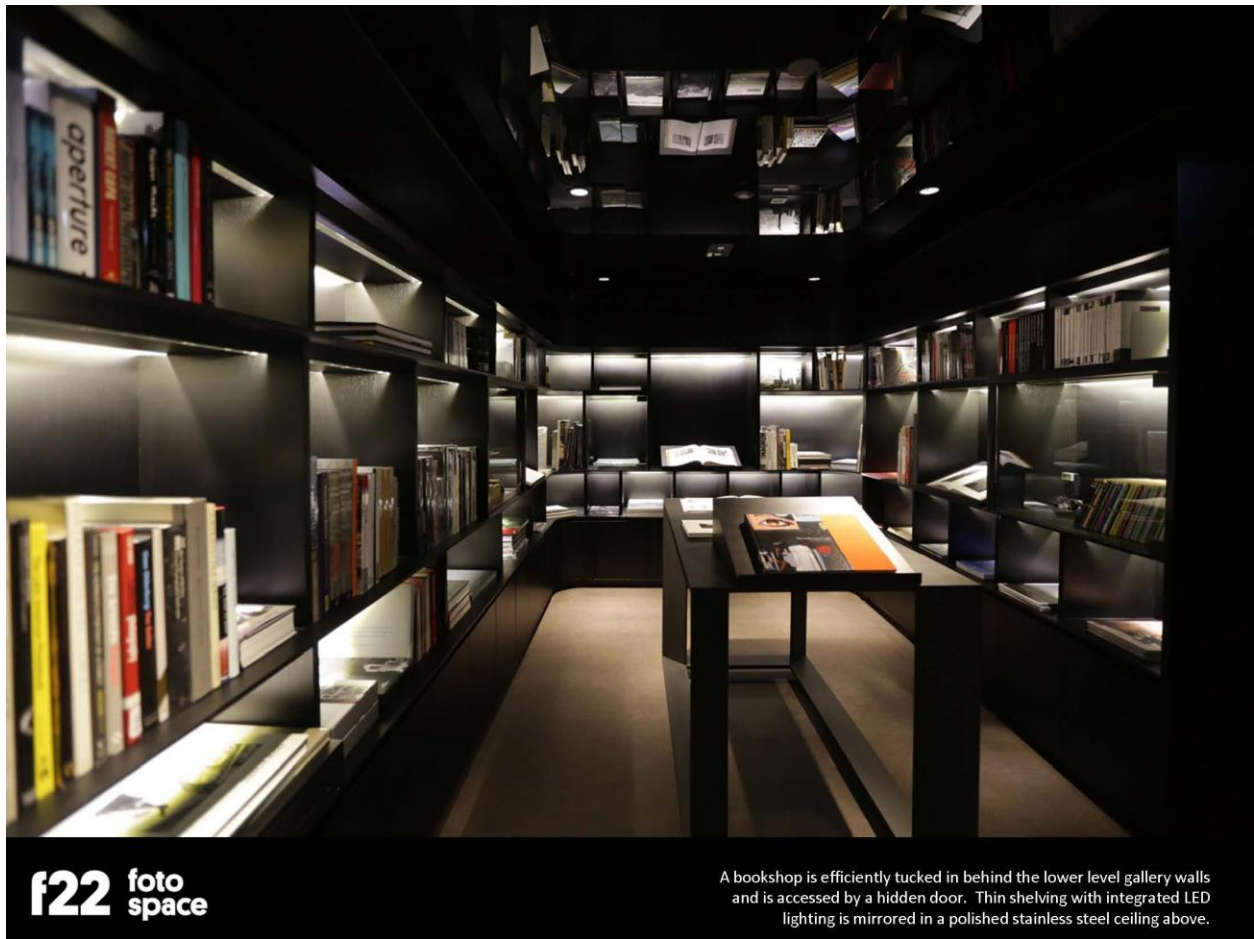
The upper level gallery has grey walls with a white floor and ceiling to contrast it with the lower floor.





f22 foto
space

A conference and meeting room features a ceiling punctuated by a custom made fixtures based on antique camera flash bulb reflectors.



f22 foto
space

A bookshop is efficiently tucked in behind the lower level gallery walls and is accessed by a hidden door. Thin shelving with integrated LED lighting is mirrored in a polished stainless steel ceiling above.



UNBUILDING WALLS – GERMAN PAVILLON 2018

Christoph Korner, Chair, Woodbury University

Abstract

UNBUILDING WALLS – GERMAN PAVILLON 2018 FROM DEATH STRIP TO FREESPACE For 28 years, Germany has been united – exactly as long as the Berlin Wall existed (1961–1989). On the occasion of this parallel, we were curating the exhibition “Unbuilding Walls” at the German Pavilion at the 16th International Architecture Exhibition in Venice. The exhibition responds to current debates on nations, protectionism and division. The German Pavilion takes the parallel as an opportunity to explore the effects of division and the process of healing as a dynamic spatial phenomenon. With reference to “Freespace,” the central theme of the Architecture Biennale, special focus will be given to outstanding examples of urban and architectural design that address aspects of division and integration. The exhibition design welcomes the visitor with the view of an almost oppressive, black, monumental wall as the first view from the entrance. After the eyes adjust to the dimmed light in the pavilion, guests start to realize that it is not a solid wall, but rather a fragmented assemblage of wall segments, scattered through the space, but distorted in a way that makes it look like a solid wall, using anamorphic effects. Once you start to move through the space, or other people are moving around you, you realize that the wall is fragmented and can be permeated. The activity of the visitor starts to unbuild the wall. The back of the wall fragments, not unlike the still existing segments of the Berlin Wall, are colorful, contrasting the stark blackness of the front. They display projects built or planned along the former iron curtain. By analyzing architectural projects on the former border strip, the question of what happened on this unprecedented void in the middle of a new capital will be examined. The heterogeneity of the multitude of approaches, typologies, protagonists, and results show the breadth of architectural debates and solutions. Taking the experience of the inner-German Wall as a starting point, the exhibition also examines historical as well as current barriers, fences and walls beyond Germany’s specific national

perspective. In the course of the preparations for Unbuilding Walls a journalist team travelled to border walls around the world. This work is shown at the German Pavilion as well. The Wall of Opinions video installation documents the voices of people who live in the shadow of walls in Cyprus, Northern Ireland, between Israel and Palestine, the USA and Mexico, North and South Korea and at the European external border in Ceuta.















Wildcat Hollow

Kimberley Furlong, Assistant Professor, University of Arkansas

Abstract

‘Wildcat Hollow’ is a new home designed for a recently retired couple that required the accessibility of one-story living and desired a strong, yet protected, connection to a natural setting. The design team employed a simple and reduced material, detail and formal palette to create a tranquil and elegant living environment. A strong collaboration between the interdisciplinary design team and the builder made a home refuge that is spatially and materially striking as well as energy efficient. Situated on a sloping site with sweeping views of the city, the home is made in and around three stone ‘boxes’ that are wrapped in locally sourced rusticated Texas Lueders limestone. One box contains a guesthouse and garage that stretch along a 6-ft-deep, 150-ft-long cut into the site’s existing limestone strata. The primary living box houses a large low-slung open living pavilion that is topped by a floating ceiling/roof plane that frames distant views to the city and intimate views through the trees. A floating glass bridge connects the main living area to a separate and third two-storey box with a master suite with screened porch below and a den/library above. Cypress board boxes enclose various functions within larger volumes of limestone walls and white oak floors. A careful orchestration of exterior and interior layers of the structures allow for a flow of a series of discrete spaces, rather than the sense of a stagnant stone monolith. In juxtaposition to the stone exterior enclosure, interior “boxes of utility” containing the cooking, pantry, laundry, television, closets and bathrooms provide a sense of separation without diminishing the unity of the whole. Aside from the conceptually simple orthogonal boxes, a floating ceiling plane, and a careful layering of exterior and interior spaces, the design of the home focuses largely on the restrained employment and detailing of a limited material palette. The palette is comprised predominantly by limestone, steel, glass, and wood, with each material given a clearly defined role that contributes to the simple harmony of the design. A carefully considered and rigorous

approach to the detailing of those materials provides subtly nuanced details such as the “woven” cypress wall boards that consistently alternate lapping at the corners of interior partitions. The resulting interior spaces are starkly simple allowing no gesture to go unnoticed. The project design team included architects, interior designers, a lighting designer and various other consultants. My role consisted of leading the interior design including extensive trim, cabinetry, custom furniture detailing, material selection and detailing, and lighting design coordination. The residence fulfills the desire for a tranquil, elegant home with the sensibilities of an art museum through clean design and a simple material palette.



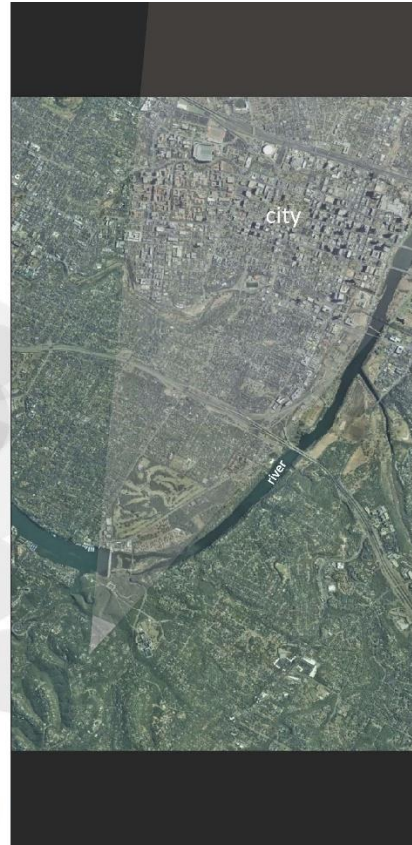
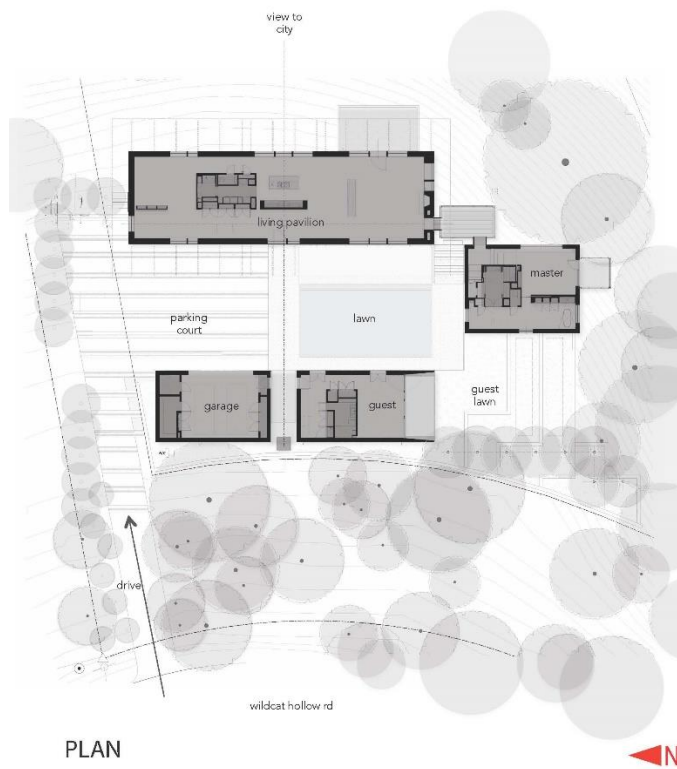
HOLLOWCAT WILD RESIDENCE
elevated ceiling plane, Texas Lueders limestone embracing walls,
wide-plank white oak floor and wall boards at entry to master retreat



living pavilion with inner court



view through glass bridge
to city beyond



local Lueders limestone quarry



local German immigrant building tradition

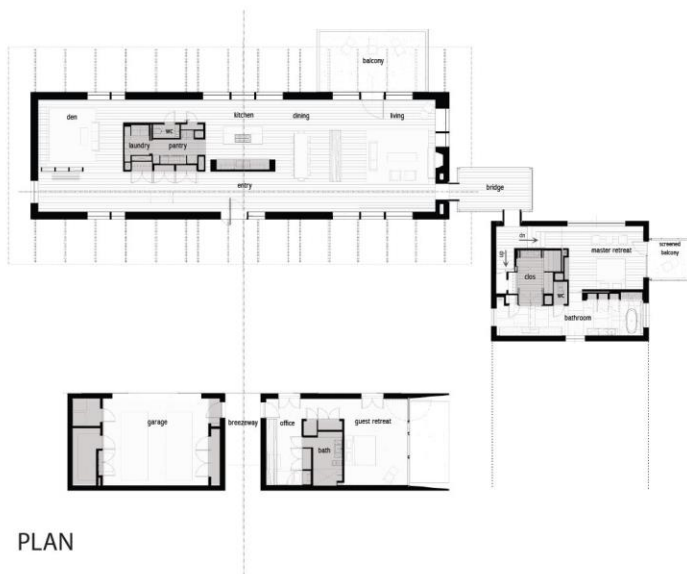


Nasher Sculpture Center white oak floors,
monolithic stone embracing walls

material, craft + spatial PRECEDENTS



Texas Lueders limestone portal from living pavilion to master retreat
natural white oak stairs and butted wall boards



KITCHEN in living pavilion





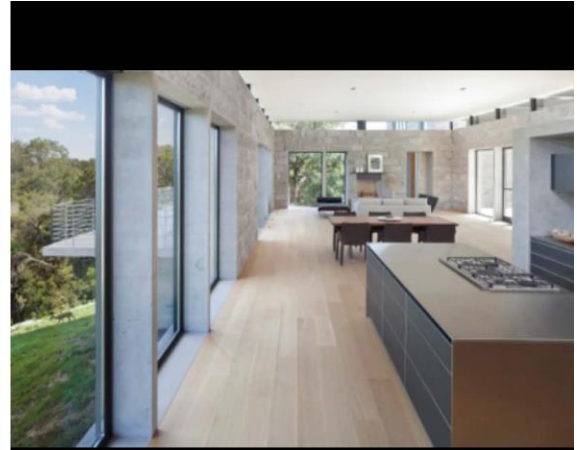
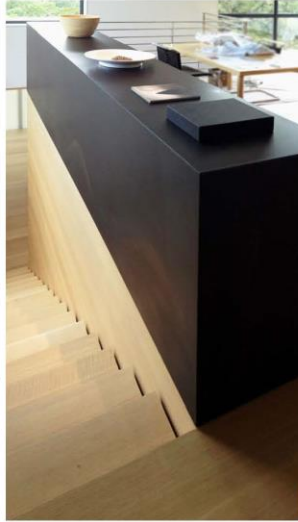
PRIVATE GUEST RETREAT
+ LAWN with living pavilion beyond

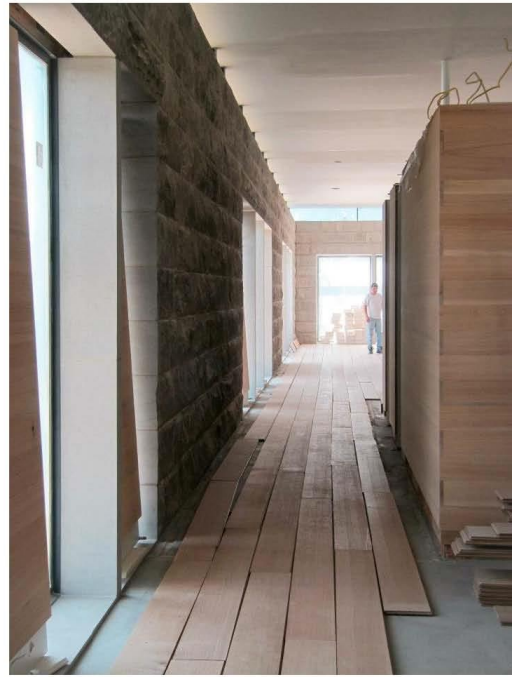


MASTER RETREAT
removed from living pavilion and shrouded in trees



SCREENED PORCH BALCONY
off master bedroom, cantilevered into trees, simple neutral palette





PECHA KUCHA

Bright Futures, Dark Futures: Envisioning the Consequences of Climate Change

William Mangold, Assistant Professor, Drexel University

Abstract

Despite increasing recognition of the consequences of climate change, for many the issue remains intangible. This design studio course vividly investigated some possible environments and lifestyles that could become our future. The scale and experience of interior space makes the outcomes of climate change more tangible by addressing the psychological and material conditions of future places and lifestyles. As a jumping off point, this studio used Peter Frase's book *Four Futures: Life After Capitalism*, which describes four provocative scenarios speculating on how society will change as a result of two global forces: automation and ecological catastrophe. Frase uses an analysis of political, economic, and environmental trends to develop a matrix in which the possibilities of abundance or scarcity are paired with those of equality or hierarchy, creating four possible combinations: communism (abundance and equality), socialism (scarcity and equality), rentism (abundance and hierarchy), and exterminism (scarcity and hierarchy). The studio design work grappled with the material, social, and ecological consequences of each of these scenarios. The scenario of "communism" imagines a society in which people can freely choose the lifestyle and activities they find fulfilling. Projects in this scenario help imagine what a future might be if society can stabilize the climate, find sources of clean energy, and develop technologies to meet all of humanity's day-to-day needs. What emerge are questions of identity, and a focus on what experiences are most valuable, delightful, or meaningful. These projects highlight the experiences possible when resources are unlimited and opportunities are unconstrained by hierarchical power structures. In Frase's view, "socialism" is a story about how society can adapt to the climate crisis by re-making our relationship to nature. The projects in this scenario contemplate an egalitarian society, constrained by scarce resources, that must work together to rebuild its infrastructure

and relationship to nature. Taking clues from historic examples like the Shakers and the contemporary “sharing economy,” these projects look at the material conditions of a more symbiotic human-environment relationship, and consider how to integrate renewable energy, manage consumption, and reconstruct daily life. “Rentism” imagines a future that amplifies many current socio-economic conditions of private property. In this scenario people pay “rent” for objects and services they want, while others own and profit from the intellectual property. Artificial scarcity is maintained through class structure and state power, despite automated production and abundance. Projects in this scenario look at how the power and influence of the elite is magnified by holding rights to the patterns necessary for production and consumption, and address questions related to class status and socio-economic relations. The “exterminist” scenario depicts a world of hyperinequality in which the wealthy elite retreat to secure enclaves while the “masses” are repressed and ultimately exterminated. It is a future that makes 3rd world scarcity and violence a reality for everyone because resources and energy are too scarce to allow everyone a high standard of living. These projects make manifest the dark possibilities of growing inequality, intensified by dwindling resources and the detachment of the socio-economic elite. The course layered intensive research and conceptual exploration of these scenarios onto a series of fundamental design explorations—threshold, circulation, display—as a way to invigorate conversation about the future, and the implications of automation and climate change. The discussion that emerged through this work, and the graphic presentation of these ideas, was compelling and eye-opening for many participants, and suggests both the need and opportunities for engaging students in social, economic, and ecological concerns.

Drawing down the bones: Five creative design processes adapted from Goldberg's methods

Lindsay Tan, Associate Professor & Program Coordinator, Auburn University

Abstract

Note: the following work was accepted to IDEC in 2018, but the author was unable to travel to present due to weather and flight cancellations. IDEC informed the author that this work could be resubmitted for review to the 2019 conference. This work has not been previously presented in any venue. This pecha kucha presentation adapts five of the creative writing processes described in Natalie Goldberg's "Writing Down the Bones" and applies them to the design process, with specific emphasis how these processes could be used to shape student learning in the studio environment. Designers have always existed at the intersection of creativity and objectivity, bridging gaps and communicating across disciplines. We borrow theory and methods from the social and physical sciences. Here we borrow from the Humanities. The five processes that will be presented are: 1) First thoughts: In which the student commits to a specific period of time – ten minutes or an hour, it doesn't matter – to design through drawing, to keep the hand moving and the mind ideating. First thoughts, as a process, is more than just a warm-up period; to be successful in this processual approach we have to ignore the internal editor – don't erase, don't worry about drawing conventions or codes – and be unafraid to lose control and design with lots of energy until the timer runs out. 2) Tap the water table: In which the student commits to the practice of designing. Input is good, but reading about and viewing good design will not make someone into a good designer; to become a good designer we must design. When we tap the water table, we don't worry about talent or capability to design or to draw; we simply engage in designing. And when we do consume design, we should not become overly obsessed with analyzing and criticizing it. There must be space to simply exist with the design, to memorize its lines, forms, and colors, and its emotional presence in that moment. 3) Don't marry the design: In which the student commits to being

awake, present, and alive in their design work. Design opens a lot of avenues within us, but we cannot let our minds wander too far astray. Do not become self-indulgent over certain design details or ideas; remain focused on the goals of the work. Stay on the side of the client; don't marry the design. 4) Make statements and answer questions: In which the student commits to cutting the qualifiers from their work. Design is doesn't just happen by some magic; designers make it happen. Perhaps this could be... Maybe you might try... Somehow you could... We need practice in trusting our own minds so that we can learn to stand up beside our drawings and say definitively: It is. 5) Spontaneous design booths: In which the student commits to letting go of ownership. Take a stack of paper, and a pen, out to a craft fair or a bazaar and set up a booth. Sell on-demand designs for a dollar each. This is a practice in becoming unselfconscious in ideating and drawing. Draw, in the moment, and then let that idea go – into the world. Even if a design is particularly successful – release it, take the dollar, and move on to the next one. These five creative design processes position the student as an authority, a designer in their own right from Day One. These practices are designed to de-emphasize the role of the critic in the creative process. There will be time enough later for analysis of the work, critique, redlines, or rejection of ideas. There is a time for the critic, but it is not in the creative moment.

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Goldberg, N. (2016) *Writing down the bones: Freeing the writer within*. Boulder: Shambhala.

Interdisciplinary Housing Studio

Carl Matthews, Professor, Interior Design Department Head, Fay Jones School of Architecture + Design

Abstract

“Housing X” was an initiative led by the “University of X” School of Architecture and Design, made possible by a \$250,000 grant from the “X Family Foundation”. This three-tiered project included a design studio focused on students, a regional symposium focused on the community, and a professional design competition. Each of these three components added to the in-depth exploration of national and regional housing issues of design, zoning, finance, city planning, community development, and community education and engagement. Throughout this exploration, we pursued the goals of educating students, informing the community, and building a better region. “Xville”, is part of a four-city metropolitan area which is one of the top twenty fastest growing metro-areas in the United States. Like many quickly growing regions housing prices are skyrocketing beyond the reach of median income families. The challenge was to design attainable housing within the financial reach of households making 60% to 120% of the median income. This demographic typically doesn’t qualify for government subsidized housing, yet may still struggle to find affordable, available housing options. This project explored ways to guide growth through an in-depth exploration and design of a mixed-income, mixed-use attainable housing that includes live-work units on several sites in “Xville.” The studio consisted of 25 students comprised of 3-person teams. Each team had 1 interior design and 2 architecture students in their final year of study. The design studio was co-led by two faculty from the School, one interior designer and one architect. Joining the studio’s teaching team were two visiting professors from San Francisco whose firm and teaching experience specialize in housing in the bay area. A studio field trip to San Francisco focused on studying award winning housing projects by a variety of design firms. Students also presented their schematic proposals to a jury of designers from those offices. The “Housing X” symposium addressed issues of attainable Housing at the regional level through an exploration of

national housing issues and solutions. The two-day event featured presentations by national experts and an intense series of public presentations and moderated discussions by regional and national experts on housing policy, finances, design, development, and construction. The symposium provided participants with a comprehensive overview of issues, challenges, and design exemplars in attainable, affordable, and mixed-use housing. The symposium also introduced innovative strategies for including attainable and affordable housing projects in local city planning goals. The professional design competition included 25 international firms preselected for their experience in multi-family housing design. Five sites were identified and five firms presented proposals for each site. Awards totaling \$50,000 were presented to the five winners. These winners are being contracted to realize the projects. At a culminating show the four most provocative student projects were exhibited alongside the professionally produced entries. Students presented their work to the founder of “X Family Foundation” and discussed design strategies with the professional competition winners, developers, and community members. As a surprise bonus to the initiative, student and professional work was exhibited at the Venice Architectural Biennale. Through this rich, multi-faceted experience, students learned the value of contributing their talents to making our community a better place.

Paper Folding in Beginning Interior Architecture Studio: Tactile Experience, Form, and Material

Jiangmei Wu, Assistant Professor, Indiana University

Abstract

Paper folding is commonly known as origami, a Japanese and Chinese traditional craft. Paper folding is easy to do by hand and does not require sophisticated tools. The form generation in paper folding is a direct result of material manipulation through a series of actions by hand. Through these simple tactile manipulations with forms, a flimsy piece of paper material gains structural strength. While paper folding can be easily done by hand, describing paper folding scientifically and representing the morphology that occurs when a flat sheet of paper is folded, however, requires complex mathematical and computational modeling. In other words, it is difficult to precisely model a three-dimensional paper fold digitally, and it is even more difficult to simulate the morphology of a paper fold in a digital environment. Current CAD technologies, such as 3D modeling tools such as Rhino and Revit, are inadequate for such a tactile design process. In courses such as Beginning Interior Architecture studios, it is extremely difficult for the beginning design students to generate innovative forms directly using 3D modeling tools, which they are just beginning to learn. However, when they are asked to work with pieces of paper using their hands in free experiments, they learn to discover new ideas and find new forms, which then inspire them to generate digital alternatives that can be used in various scales in their interior design activities. In an introductory interior design and architecture studio, paper folding was introduced to the first year students to help them understand basic design principles such as symmetry, repetition, and modality. The goal was to produce a small-scale paper folded light sculpture that is volumetric and that can enclose a light source. One of the main criteria of the project is based on how well the light source interacts with the mountains and valleys of the paper folds to create a dynamic gradation of light and shadows. The project was divided into three small parts that serve as learning scaffolds. In the first part,

the students were asked to create small units of paper folds from pieces of small square paper. Students were asked to draw simple line drawings based on two-dimensional compositions they made in a previous project using straight edges and compasses. They were then asked to give mountain and valleys to the line drawings and they started folding. The students quickly found out that preconceived mountain and valley assignments often didn't give rise to successful volumetric paper folds. Instead, they learned that folding paper was a very tactile experience and that each paper fold works like a small mechanic. To manipulate these small paper mechanics, one needed to cut, fold, pinch, pull, roll, tuck, and pop through a series of freehand experiments, similarly in ways to how a sculptor works with lumps of clay. While they started with some predesigned line drawings, they had to add new crease lines and ignore some original lines in their new paper folds. In the second part, the students were asked to connect four to eight units of their paper folds together. Students were taught to connect the units by using ways to make symmetries, such as translation, rotation, reflection, glide-reflection. They learned that to connect units together, they must pay attention to the boundary conditions of their paper folds. Complicate boundaries of a paper fold might be difficult to connect in modular form. In the third part, they were asked to use as many units as they needed to create their final design. They learned that by connecting these small paper mechanics, they would end up with larger pieces of mechanics which they need to manipulate again by hand to create the final stable volumetric forms. In addition, they were also taught to use polyhedral geometries, including icosahedron, dodecahedron, triacontahedron, rhombic dodecahedron, etc., to connect the units into fixed three-dimensional volume

Recursion

William Biss, Assistant Professor Interior Architecture, Chatham University

Abstract

Recursion is a motor-learning based, pedagogical approach to software involving the application of a procedure with successive executions resulting in a repetitive pattern indicative of the recursive process. The current zeitgeist surrounding today's technology and software is focused on potentials beyond intended use. This has been practiced in our discipline for years where photo manipulation software is used for interior renderings, animation software is used for formal studies, publication design software is used for portfolio development and illustration software is used for enhancing bubble diagrams, flowcharts and blocking diagrams. Recursion looks at motor-learning theory as an approach to build competency and efficiency in Computer Aided Drafting software. Recursion takes an introspective look at CAD, which has traditionally been accepted simply for what it is, Computer Aided Drafting and exploits a correlation between how we learn the software and how we use the software. Although the breadth of CAD software is technically expansive its foundational use can be distilled down to ten recursive commands organized into three categories; Drawing, Modifying and Precision. Drawing = Line, Square/Rectangle, Ellipse/Circle, Polygon Modify = Copy, Move, Rotate/Copy, Mirror/Copy Precision = Ortho ON/OFF and OSnaps ON/OFF Foundationally, the recursive procedures integrating the ten commands promote learning, build competency in the software, establish fluid muscle memory among "left click", "right click" and "ESC" and result in patterned compositions indicative of the process. The foundational yet abstract nature of Recursion successfully integrates motor-learning, software fluency and design in a robust manner that is unmatched and lacking in traditional CAD101 paradigms. Furthermore, the recursive patterns initiate exploration and interpretation through specializations such as textile design, laser cut screening systems, 3D printed surfaces, Parti or formal organizational

strategies, wall covering design, screen prints, vinyl wraps on forms/surfaces, infused lamination on tile, decorative panels or artwork, fixtures/hardware, lighting, etc.

Shifting the Paradigm

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Abstract

Typical Interior Design student organizations often place emphasis on networking and developing necessary technical skills; however, they fail to prepare students to engage directly with their communities. Interiors Students Alliance (ISA), an on-campus student organization, explores and develops a new layer which builds upon the traditional student organization goals, to expand the discipline as a social agency within our local context. It is becoming increasingly clear that "design is no longer only about aesthetics, but has the power to become a social agency;" and both interior design education, and organizations must help guide students to use their skills outside the classroom or office setting to further benefit local communities (Zingoni, 2018). Based on this intent, two years ago ISA created "Light for Hope"; a student-led (faculty inspired) service learning project that enables meaningful experiences by empowering design students to use their acquired design skills for good. Upon its first year, Light for Hope was awarded in 2018 "The Best Thing Ever" by the IIDA HQ, for its impact in the community, how it leveraged interior design education to raise awareness on a variety of social issues and its outreach to other design disciplines students, the industry professionals and the public in general. Light for Hope is a multifaceted event where students are invited to participate by using their skills to benefit others. Its mission is to empower students to design for the public good. Students are invited to partake in the full creative process of ideation, designing, prototyping and fabricating a functioning light fixture, which in turn will help shine some light. These lights are then auctioned at a public event organized by ISA to fundraise for Free Arts, a non-profit organization that empowers children who have been victims of abuse, by teaching various art forms. During its first two

years over forty lights were designed, made, gifted and later auctioned. This has become a role model for other organizations on campus as well as to other disciplines, benefitting, simultaneously the community, and our students' learning experiences. Since Light for Hope is not associated with any class and therefore offers no credits, all the work comes from students' own motivation to shine a light on others. By using the skills learned from their interior design education, students achieve far more than they have imagined. Using their technical skills to build something that not only lights up someone's home, students develop consciousness about realities different than their own. Students are able to flex their creative muscles through the design-build process, while simultaneously learning about empathetic design and the moral responsibility that designers possess. Furthermore, the lights created by the students to benefit the community have become small bits of hope, which illuminate someone during the toughest of times. Light for Hope enables students to use their interior design education in a relevant and meaningful way to truly implement change and shine a light in the lives of others.

References

Zingoni, Milagros. "INTERIORITY AS A TOOL TO UNDERSTAND THE WORLD AND PROJECT ALL VOICES." IDEC Exchange, 2018, www.idec.org.

Swamp Pop Fusion – Teaching Interiors in the Muddy Terrain of a Multi - Disciplinary Curriculum

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Abstract

Imagine the swank of New Orleans' rhythm and blues, layer in the honkey-tonk sounds of country western and finally toss in the staccato of a Cajun fiddle and you will have swamp pop, a southern regional musical genre of the 1950s and 1960s. Ballads of heartfelt emotion emoted in an often humorous, self-deprecating tone, expressed the feelings of young people coming from varied, muddy, often impoverished backgrounds as they looked to engage a modern, global world of popular and rock and roll music. Swamp pop is our analogy for the experience of being interiors educators on a unified faculty teaching across the disciplines of architecture, interior design, and industrial design. Individual faculty have areas of expertise specific to our disciplines, but we are, as a group, responsible for a shared curriculum of core skills courses, design foundations, portfolio seminars, and advanced technology and theory courses. And to muddy waters more, there are required electives, the inevitable substitutions, and minors. Like swamp pop, we've learned to not take ourselves too seriously, while always being heartfelt in our commitment to our students. In twenty slides we will show ten situations with ten resolutions. Our lyrics will include classics like, "Exactly why am I drawing flying toasters?," "of course you can sit in on the residential planning project," "you know we love you, but why is your desk in the interiors studio if your major is architecture?," "sorry, 'interiors research methods' is not the same as 'industrial design research methods'," and our favorite, "everyone takes lighting even if they don't have to."