# abstracts

blatent

**abstracts**

**National Conference on the Beginning Design Student 2022**

Ball State University

Sean Burns & Kristin Barry, Ph.D.

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**National Conference on the Beginning Design Student 37**
Ball State University, 2022
Sean Burns & Kristin Barry, Ph.D

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# schedule

## FRIDAY / APRIL 1 / 2022

### 8:00 - 9:00 AM
Registration / Breakfast / Architecture Building Atrium

## SESSION A

### 9:00 - 10:30 AM

*Computer Modeling and Graphics / AB 410*

**Zachary Tate Porter**, University of Nebraska, "Imaging Models & Modeling Images"
**Michelle Pannone**, Marywood University, "Cross Application Workflows: The Integration of GIFs in Design Education"
**Grant Alford**, Kansas State University, "New Media and Two-dimensional Architectural Representation: Interactive Drawings from a Topical Seminar"
**Iman Ansari & Marta Nowak**, The Ohio State University, "Design through Simulation: Digital Experimentation in Architecture"

*History, Theory, and Culture in Design / AB 310*

**John Reynolds**, Miami University, "Design and The Poetics of Everyday Life: Exploring the Tangible and Intangible Dimensions of Vernacular Architecture and its Landscape"
**Richard G. Hunt**, OCAD University, "Does the appearance of typographic forms have intrinsic meaning?"
**Marianne Holbert**, University of Colorado Boulder, "Probing the Latent and the Blatant: A Didactic Tool for Addressing the Dimensions of Culture in the Design Studio"

*Technology and Structure / AB 210*

**Cesar Cruz**, Ball State University, "Towards a Phenomenology of Teaching Architectural Building Structures"
**Mike Christenson**, University of Minnesota, "A Beginning Course in Building Technology"
**Stephanie Bunt & Nathan Brown**, Penn State University, " Optimization tools as a platform for latent qualitative design education of technical designers"

### 10:30 - 10:45 AM
Coffee Break / Architecture Building 2nd Floor Lounge

## SESSION B

### 10:45 AM - 12:15 PM

*Drawing and Representation / AB 410*

**Tim McGinty,** AIA Emeritus, Boulder, CO, "Freehand Drawing - Linking Skills and Imagination"
**Brian Dougan**, American University of Sharjah, "Curricular continuity: a two-semester drawing syllabus"
**Sarah A. Ra,** Oklahoma State University, "Notan to Color: Abstraction through Discovery"

*Design-Build and Fabrication / AB 310*

**Clifton Fordham**, Temple University, "Repositioning Design: Unpacking a Materials & Methods Fabrication Project
**Bruce Wrightsman**, Laurentian University, "Is learning 'to make' enough? The latent value hidden in design-build in early design education
**Ming Tang, Whitney Hamaker,** University of Cincinnati, & **Yingdong Hu**, Beijing Jiaotong University, "Interstitial Latency in Design-Build Architectural Education"

*Spatial Studies / AB 210*

**Berrin Terim,** Clemson University, "Representing Movement: hidden trajectories of obvious pieces"
**David Matthews**, University of Tennessee Knoxville, "Tools for Spatial Exploration: Possibility, Abstraction, and Discovery
**Lee-Su Huang**, University of Florida, "Abstract to Real and back again: From Drawing Light to Shaping Space"
**John Linn**, Highpoint University, "Spatial Exploration with Froebel Influences"

## 12:15 - 1:15 PM

Lunch / Architecture Building Atrium

SESSION C

## 1:15 - 2:45 PM

*Equity, Justice, and Inclusion / AB 410*

**Donna Kacmar & Meg Jackson**, University of Houston, "Design Justice"
**Sara Reed & Emily Smith,** Virginia Commonwealth University, "Emblems of Colonialism: A Research Methodology to Investigate Hidden Stories of Design Objects Within the Built Environment"
**Alejandro Borges,** Texas A&M University, "Solid/Liquid: Inhabiting the Margins in the Liquid Studio through Fantasy Thinking"

*Strategies and Complications of Design / AB 310*

**Stephen Temple**, University of Texas at San Antonio, "The Necessity of Troublesome Encounters in Learning to Design"
**Marianne Cramer**, University of Georgia, "Using Teachable Moments to Bridge Tacit & Explicit Learning"
**Fiona Lim Tung**, University of Waterloo, "People Powered Projects!"

*Interdisciplinarity and Allied Arts / AB 210*

**Katrina Lewis, Katie Kingery-Page, Hyung Jin Kim, & Neal Hubbell**, Kansas State University, "Interdisciplinary Collaboration in Professional Design Learning with Early Design Students"
**Kory A. Beighle**, Miami University, "Teaching Craft through Documentary Film: Exploring the Latent and Blatant Implications"
**Caleb Generoso**, University of Florida, "Architectural Education and Cinema: Collage and the Filmic Imaginary"

## 2:45 - 3:00 PM

Coffee Break / Architecture Building 2nd Floor Lounge

SESSION D

## 3:00 - 4:30 PM

*Play, Playfulness / AB 410*

**Arief Setiawan**, Kennesaw State University, "Playing with Pieces: Assembling Knowledge"
**Andreas Luescher,** Bowling Green State University, "Discovering Latent Creativity Playing with Concrete Masonry Units"
**Lee-Su Huang**, University of Florida, "Prototyping the known, designing the unknown: Kinetic architecture as pedagogical device for teaching adaptation and integration"
**Julie Kress**, University of Tennessee Knoxville, "Learning Latency through Blatancy: Introducing Digital Realism in an Early Design Studio with an Emphasis on Imagination and Play"

*Music and Design / AB 310*

**Will Wittig**, University of Detoir Mercy, "Studio Improv"
**Deborah Oakley**, University of Nevada, Las Vegas, "ArchiToneics: Explorations of Music in the Architectural Design Studio"
**Charlott Greub**, North Dakota State University, "Illustrating the Dialectics of the 'Blatant' and the 'Latent' through Translating Drawing Notations in Music and Architecture"

*Design and Life / AB 210*

**Patrizio Martinelli**, Miami University, "Discovering the Unexpected: From Everyday Life to the Construction of Architectural Space"
**Francesco Cianfarani**, University of Oklahoma, "The Entomological Programming Project: Contemplating Relationships between Morphology and Needs"
**Kristen Kelsch**, Louisiana State University, "Where the River Meets the Sea: Elevating Technical and Experiential Learning in the Rising Studio"

## 5:00 PM

Keynote Address / AB 100 / Eric Höweler

## 6:30 PM

Reception / Architecture Building Atrium

## 8:00 - 9:00 AM
Breakfast / Architecture Building Atrium

# SATURDAY / APRIL 2 / 2022

SESSION A

## 9:00 - 10:30 AM

*Careers and Post-Graduation / AB 410*

**Brigid O'Kane**, University of Cincinnati, **& Sara Maloney**, Designer, "The Heroine's Journey: Aligning a Career Path with Personal Values"
**Katrina Lewis & Byungsoo Kim**, Kansas State University, "First-Year Design Students' Readiness to be in Different Disciplines: An Investigation of the Skill Readiness and Preparedness for the Coming Years of Study"
**Anali Gharakhani**, Texas Tech University, "Game of Hand and Mouse: A Short Exercise in Architecture Education's Self Reflection"

*Studio Theory and Criticism / AB 310*

**Matthew Shea**, University of Colorado Denver, "Critting the Crit: A Pragmatic Approach"
**Liane Hancock, Kiwana McClurg, & Kristen Lyon**, University of Louisiana Lafayette, "Field Position: Studio Typology through the Student Lens"
**Felipe Mesa**, Elena Rocchi, Catherine Spellman, Arizona State University, "La Máquina: Operational Matrix for an Inclusive Architecture"

*Forms and Objects / AB 210*

**Frank Jacobus, Angela Carpenter, & Rachel Smith Loerts**, University of Arkansas, "Your body is a Blatant Object: And Damn It's Latent"
**Jongwan Kwon**, Kansas State University, "Form Follows Dual Functions: An Inquiry of Formal Design"
**Jonathan Williams**, North Carolina State University & Iona College, "Learning Design Through Designerly Knotting"

## 10:30 - 10:45 AM
Coffee Break / Architecture Building 2nd Floor Lounge

SESSION B

## 10:45 AM - 12:15 PM

*Ecology, Biology, and Landscape / AB 410*

**Jennifer Akerman**, University of Tennessee Knoxville, "Metabolic Architecture: Teaching through Growth and Decay"
**Carley Rynar, Bradley Walters & Adline Hofer,** University of Florida, "Rituals of Place: Measure and Meaning in Ephemeral Landscapes"
**Justin Parscher**, The Ohio State University, "Accounting for Taste: Students and Landscape Architecture"
**Devon Ward**, Ball State University & Kirill de Lancastre Jedenov, The University of Western Australia, "Education in the Expanded Field of Design: Biological Design"

*Scale / AB 310*

**Jonas Hauptman**, Virginia Tech University, "Exploring Life Center Design through Standardless Material"
**Robert Williams**, University of Massachusetts Amherst, " Ghosts of Borges: The evolving role of scale in architectural imagination, representation, and building"
**Margaret McManus**, Savannah College of Art and Design, "Exercising Scalar Shifts with Beginning Design Students"

*Curriculum and Pedagogy / AB 210*

**Noor Danielle Murteza & Madison Sabatelli,** The Ohio State University, "Pedagogical Ambiguity and Ambiguity of Pedagogy: Pattern Pedagogy as Sense-Making in Design Foundations"
**Liane Hancock & Kari Smith**, University of Louisiana Lafayette, "What Toto Knew: A Study in Transparent Pedagogy"
**Saskia van Kampen**, San Francisco State University, "Translating latent cultural capital of beginning design students into unique creative voices"

## 12:15 - 1:15 PM
Lunch / Architecture Building Atrium

## SESSION C

### 1:15 - 2:45 PM

*Design Processes / AB 410*

**Keith Peiffer & Jerry Stivers,** Oklahoma State University, "Firsthand Encounters & Ephemeral Conditions"
**Frank Jacobus, Angela Carpenter, & Rachel Smith Loerts**, University of Arkansas, "The Making of Things: A Primer for Early Design Education"
**Sarah Keogh,** Ball State University **& Chelsea Wait**, University of Wisconsin-Milwaukee, "Tangible and Intangible: Best Practices in Coordinated and Independent Studio Pedagogies"
**J. David Matthews & Scott Poole**, University of Tennessee Knoxville, "Igniting the Imagination: Speed, Slowness, Simultaneity as a Path to Discovery"

*Alternative Learning and Cognition / AB 310*

**Jeremy Merrill**, Ball State University, " The Experiences of Neurodiverse Students in Beginning Design Education"
**Nate Imai**, Texas Tech University, "Building with Bloom: Developing Student Metacognition in Beginning Design Studios
**Michael Gonzales & Meg Jackson**, University of Houston, "Algorithmic Thinking in the Beginning Design Process"
**Benjamin Smith**, Tulane University, "Teaching Architecture's Epistemology or: How Students Know What They Know"

*Context and Place-making / AB 210*

**Arsenio Rodrigues**, Bowling Green State University **& William Batson**, Prairie View A&M University, "Archetypal Design Constructs in Early Design Studios: How to Explore and Expose Beginning Design Students to the Unseen in Architecture"
**Sarah Aziz,** University of Colorado Denver, "Disturbing Behavior: A Case for Close Examination"
**Deborah Ku**, Auburn University, "Collective Composition: Context as Primary Character in Beginning Design Pedagogy"
**Glenn NP Nowak**, University of Nevada Las Vegas, "Architectural Collage: Making everyday built environments more hospitable with hospitality design"

### 2:45 - 3:00 PM

Coffee Break / Architecture Building 2nd Floor Lounge

## SESSION D

### 3:00 - 4:30 PM

*Learning and Teaching Analysis / AB 410*

**Meg Jackson**, University of Houston, "Prioritizing Design Behaviors: Establishing Studio Culture in Online and Hybrid Studio Formats"
**AnnaMarie Bliss & Andrea Melgarejo de Berry,** University of Illinois at Urbana-Champaign, "Reflection and Prospection: Advocating for an integrated design foundation"
**Erlene Clark**, Austin Community College, "Criticism and Intent: A Design Studio Paradox"

*Graphics and Representation / AB 310*

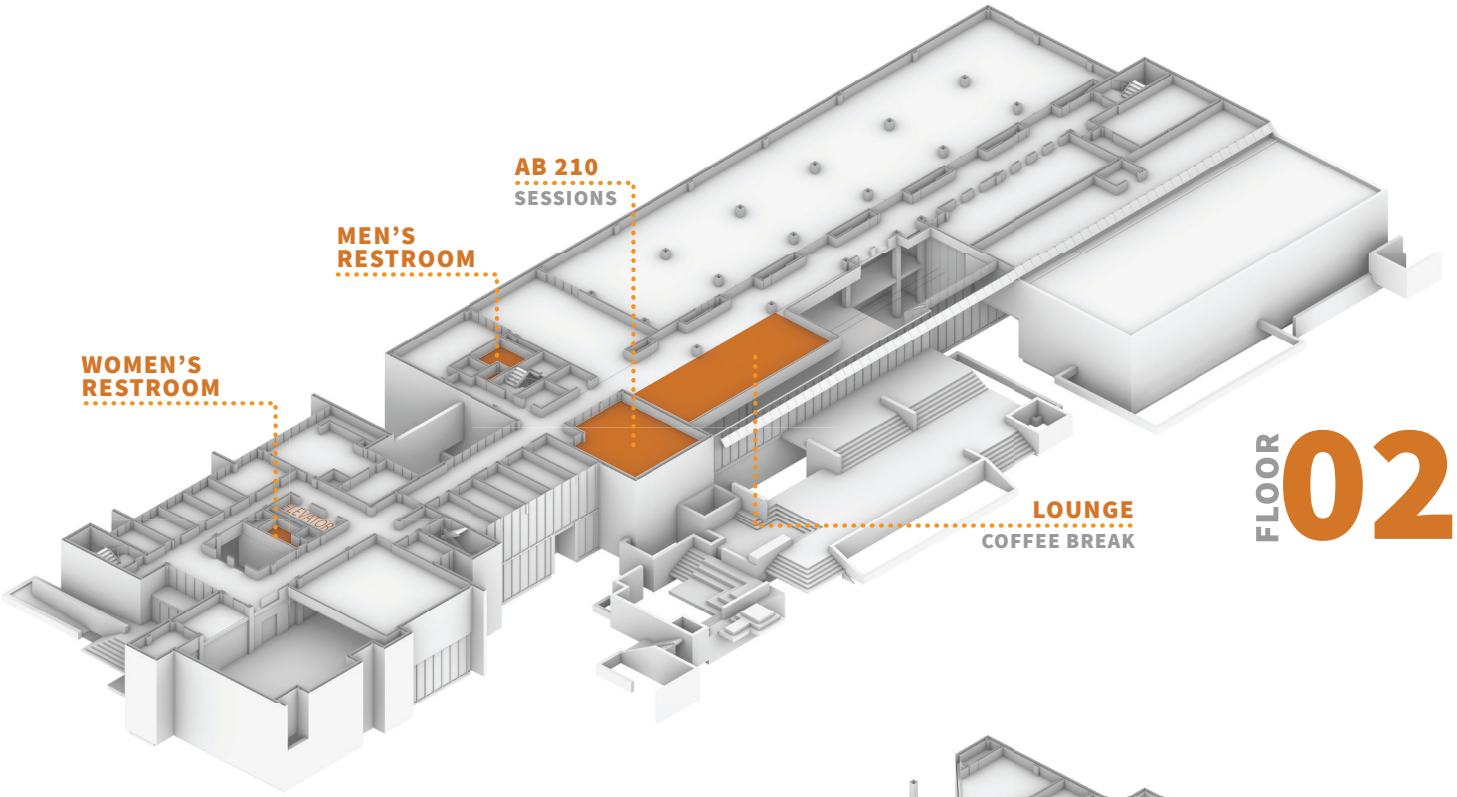
**Simon Bussiere & Lance Walters,** University of Hawaii at Manoa, "Finding Space for Drawing: Blatant Observation and Latent Pedagogy"
**Ross Wienert**, University of Houston, "Non-Square Grids: Voronoi Explorations in First Year Design"
**Mark Alan Blumberg**, Auburn University, " The Articulated Latency of the Diagrammatic Line"

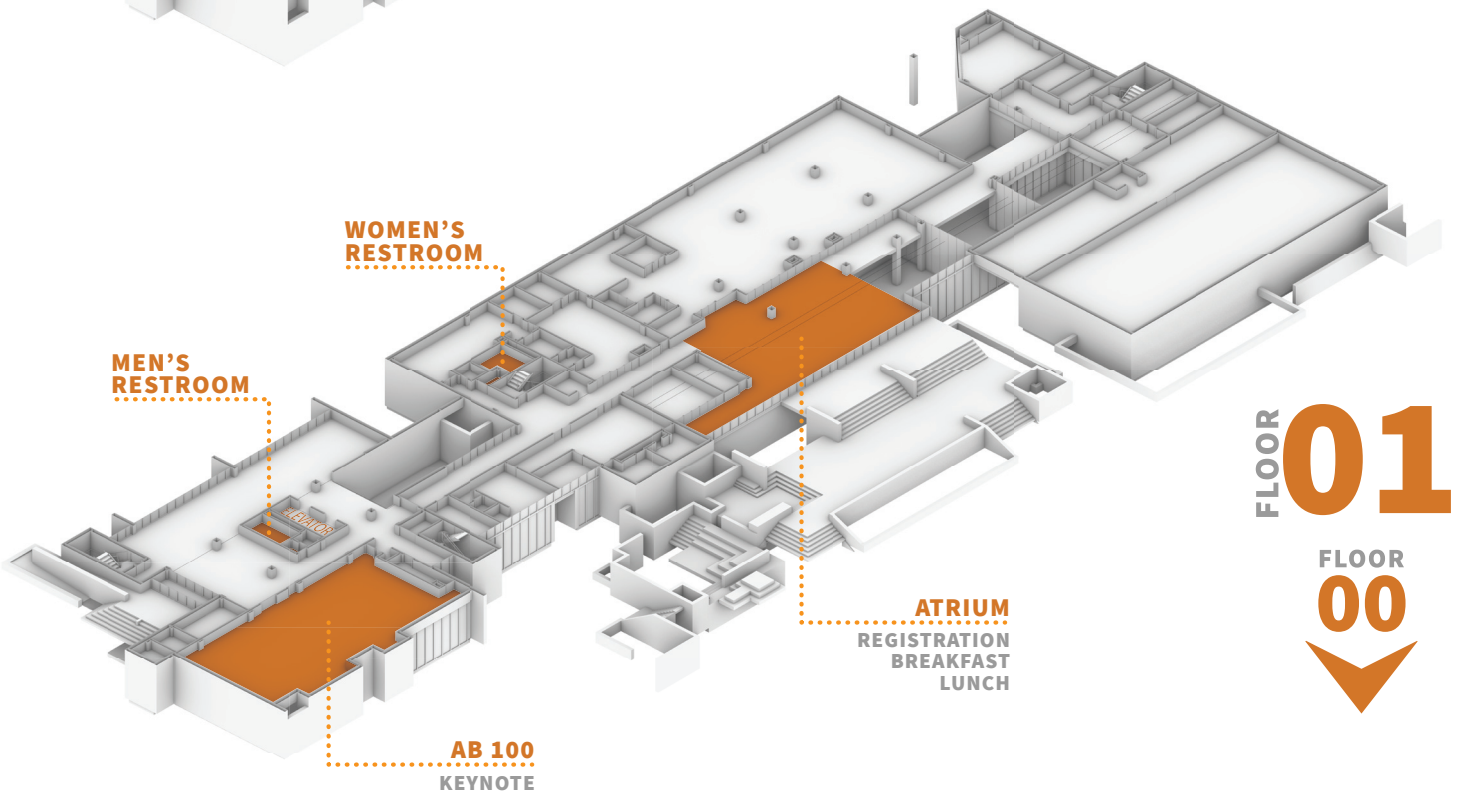
### 5:30 - 7:30 PM

Closing Reception / David Owsley Museum of Art / Fine Arts Building

# Architecture Building (AB)

## College of Architecture and Planning



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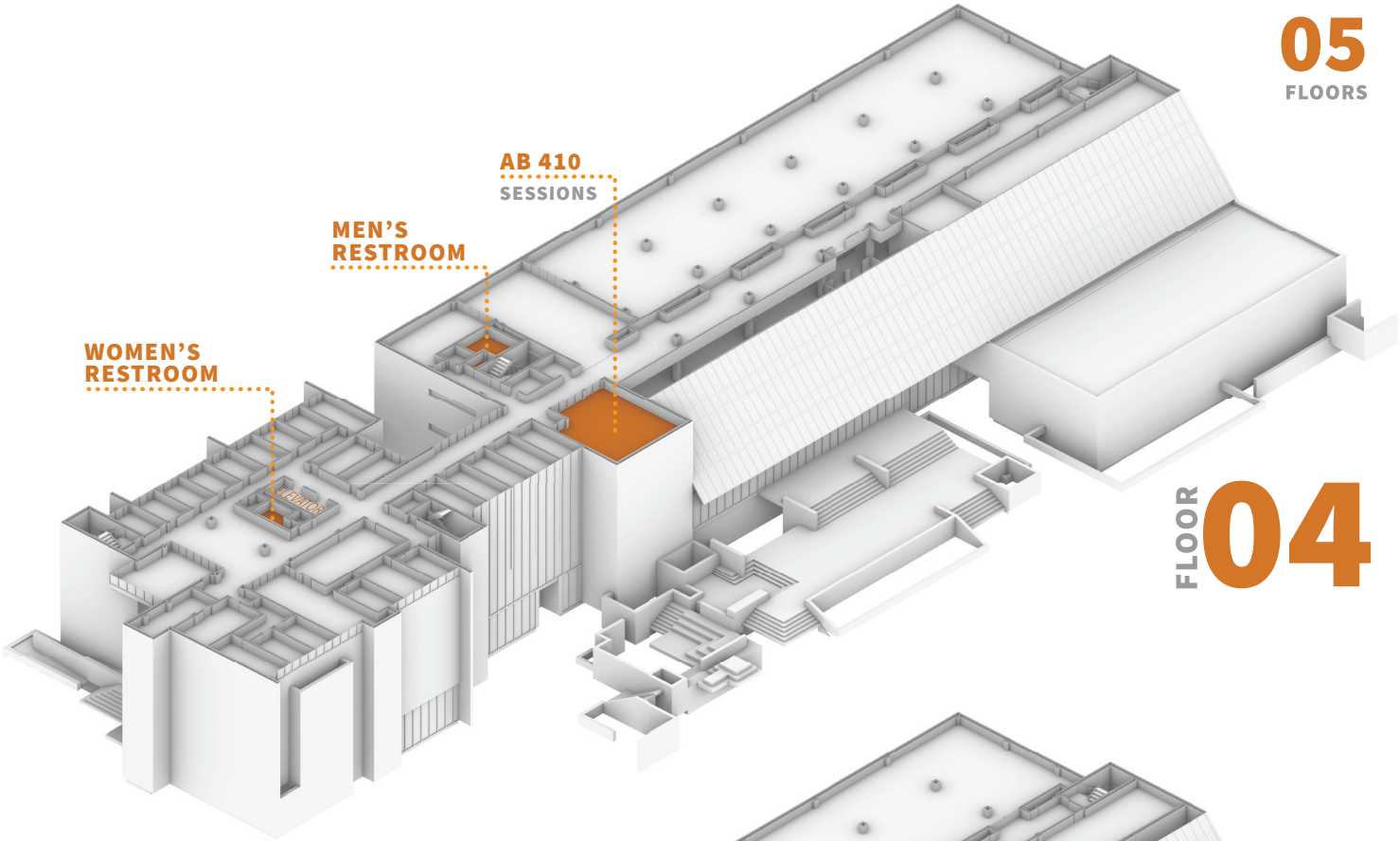


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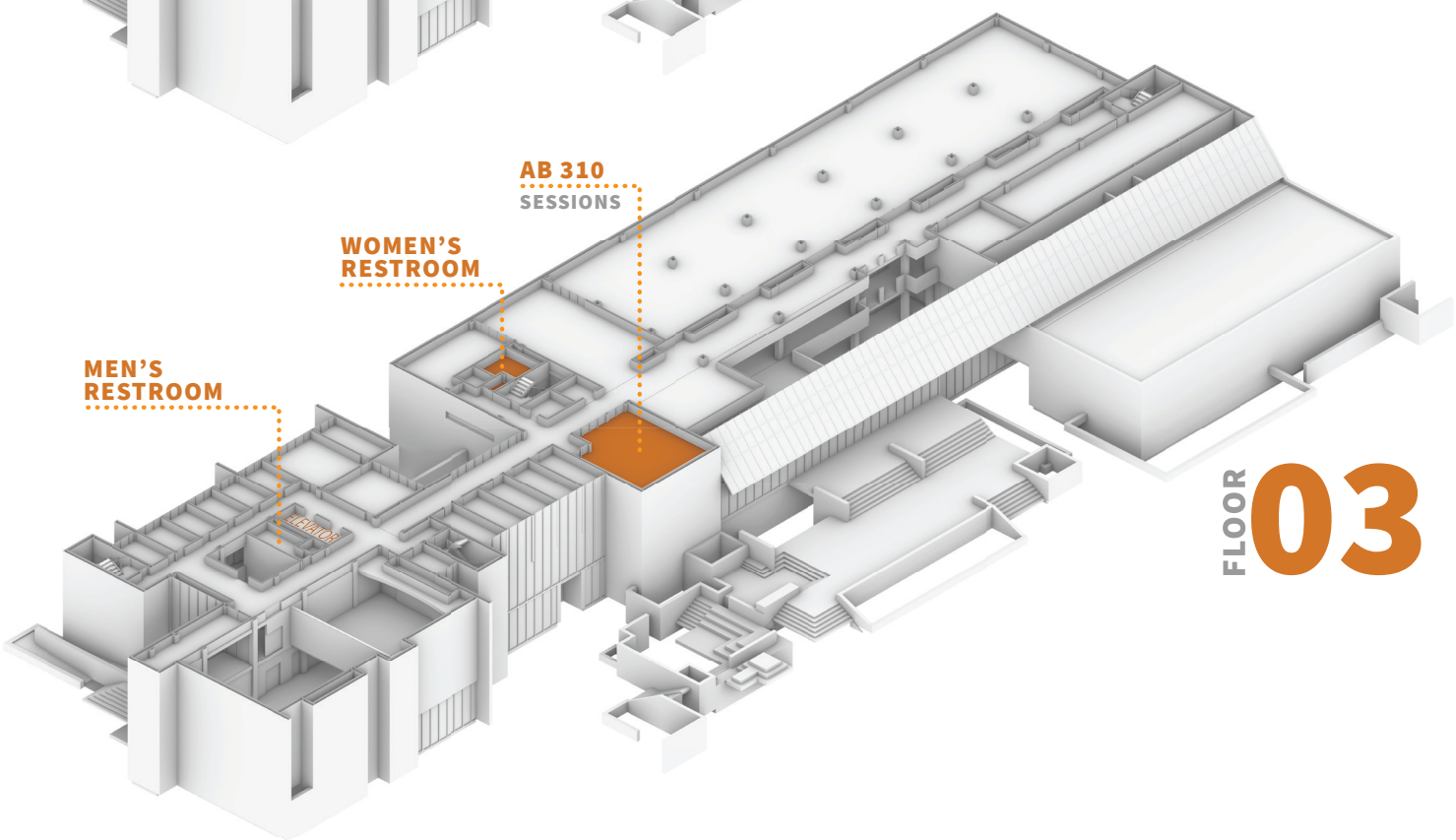


FLOOR 03

# Metabolic Architecture: Teaching through Growth and Decay

Jennifer Akerman, University of Tennessee, Knoxville

Designers continually pivot between that which is rooted in rational intention and that which is intuitively generated. Teaching and learning in the early phases of architectural design benefits from both approaches. The balance an instructor strikes between teaching a proscribed set of exercises and encouraging the student's self-discovery of design is truly a matter of agency. Relinquishing the illusion of control, we can teach students to create generative processes more attuned to complexity.

The pedagogical approach for a beginning graduate architecture design studio shared here frames design education as a dialogue between instructor and student, and between thinking and making. Over the course of three weeks, students were tasked with designing, fabricating, and operating a full-scale installation "demonstrating qualities of growth and decay as a means of exploring architecture's agency as an active participant with its expanded ecosystems." What is a first-year student to make of this?

Through the project, the students explored ideas rooted in architecture's myriad contingencies, including indeterminacy and a deep interest in living forces that shape the built environment. The result is a shelter that changes perpetually—growing with the addition of new materials as scripted by the students, decaying in response to wind, rain, and other forces of decomposition. The structure's metabolism links designer, fabricator, and occupant with site complexities—weather, gravity, spiders, mold, neighboring studios—some predicted in advance, and some emergent or made visible by the project itself. The process invites students to suspend disbelief, to explore material agency, to recruit time as a partner, and to explore a form-making process allowing space and enclosure to emerge and evolve without being fully preconceived through typical design methods. Projects like this allow students to work in a continual dialog between intuition and outcome, continually developing the architecture though a careful choreography of action/reflection/reaction.

# New Media and Two-dimensional Architectural Representation: Interactive Drawings from a Topical Seminar

Grant Alford, Kansas State University

In a 2018 op-ed for *The Architect's Newspaper*, architect Adam Fure responded to an ongoing debate about the value of post-digital drawing. In the article, Fure suggests that the post-digital movement is not simply a rejection of digital tools but a recognition that architects should explore the everyday "habitual digitality" that now encompasses everyday life instead of focusing only on exotic tools at the forefront of the digital avant-garde.[1] The most ubiquitous aspect of our now commonplace digital lives is the smartphone. Through apps, games and mobile operating systems, people manipulate diverse graphic systems by swiping, tapping, and tilting billions of utterly common little computers. In line with the conference theme, this paper presents student work exploring new potentials for two-dimensional architectural representation latent in these interactive new media devices.

Graduate students developed experimental final drawings to be engaged on mobile devices through web-based apps. The seminar was an experiment in beginning design because the methods used to create graphic material as well as construct interactive web-apps was so new to them. The semester was divided into two parts. First, two-dimensional drawing with a digital tablet and the *Procreate* app was introduced; second, an app and game development platform, *Construct 3*, was used to explore strategies for interactivity. In addition to final drawing projects, the paper reviews technical methods, pedagogical lessons and provides theoretical context for the study.

[1] Adam Fure, "What does it really mean to be 'post-digital' in architecture and beyond?" *The Architect's Newspaper*, May 2018, https://www.archpaper.com/2018/05/postdigital-for-the-record/

# Design through Simulation: Digital Experimentation in Architecture

Iman Ansari, The Ohio State University
Marta Nowak, The Ohio State University

Architecture has often attempted to emulate scientific processes and methods through various forms of experimentation. From David Boswell Reid's experiments in the temporary Houses of Parliament in the 1830s, to John Shaw Billings' experimental design of the Johns Hopkins Hospital 1880s, designers have often relied on scientific approaches in order to test or validate design hypotheses. However, the difficulty of creating real-life conditions of buildings in a laboratory setting has limited the reliability and impact of such experiments. The recent development of pedestrian and crowd simulation tools, however, have offered the opportunity for experimentation in architecture. Unlike their earlier counterparts that dealt with the movement and flow of gases, fluids or particles, pedestrian and crowd simulation tools are concerned with the complex movement and behavior of people, making them more relevant, and applicable, to the design of spaces and buildings. This paper introduces the concept of simulation as an experimental design tool in architecture. It describes the application of agent-based pedestrian simulation software—*Pedestrian Dynamic* and *AnyLogic*—to the design of a medical office building by AN.ONYMOUS. The simulation tools allowed for testing the real-life conditions of circulation within the building before the construction. But most importantly, the use of simulation software here is concerned not just to test or validate a pre-established hypothesis or even *design*, but as an analytical and design tool itself that could guide and inform the design. The process, therefore, applies the scientific method to the design process by simulating the experiment without the need to construct it. The final plan of the building is then merely an organizational framework for the transient and complex patterns of human movement and behavior in the building.

# Disturbing Behavior: A Case for Close Examination

Sarah Aziz, University of Colorado Denver
Marc Swackhamer, University of Colorado Denver

*Disturbing Behavior* is a Colorado-based graduate research seminar that asks students to conduct weekly expeditions to different constructed landscapes in the region and experience firsthand how they are both affecting and being affected by complex phenomena such as race, social class, and climate change - through the dredging and resurfacing of caves, removal of uranium disposal sites, and the impact of climate change on social justice issues that are exacerbated along Denver's racial lines. Site visits range from the very small, such as isolated markers that retell contemporary constructions and experiences of history through the eyes of previously marginalized actors, to the very large, and include terraformed show caves and relocated indigenous dwellings.

Four weekly precedent projects and readings supplement the trips, frame the conversations, and provide pathways for registering the nature and extent of human interaction with the earth's surface. All the manufactured environments sit at the confluence of multiple ownership types, ecological systems, and political agendas, and the students must engage in close and critical observation, debate, and outsider research to understand how they function: environmentally, socially, territorially, and in the popular imagination. This process allows them to glean insights into the way each site's complex geologic histories, colonial legacies, and anthropogenic activities are indelibly inscribed on its surface and, in turn, move from the blatant to latent and find new meanings in the intentional and accidental forms we individually and collectively create.

# Exploring the Latent and Blatant Implications of Teaching Craft through Documentary Film

Kory Beighle, Miami University

Teaching craft is a difficult thing. One can set up the perfect conditions and say all the right things, but craft is not just about the how; it's an attitude. At a lecture of The First Annual Conference of American Craftsman in 1957, Charles Eames made this point, suggesting that American design culture was on a path to losing its sense of craft. For Eames this was a problem broader than the quality of an object; it was a matter of survival for his time. If he said the words today, no one would believe them to be out of context. Eames was sounding a clarion call to all craftsman, challenging them to internalize craft as a collective state of being – "If we are going to survive, we have to become craftsmanlike people."[1]

As an educator in the space of design foundations, one is constantly working to adopt this mindset, while working equally hard to convey the importance of this state of being for the beginning design student. The goal goes beyond a place where craft is simply a line item on a grading rubric; craftsmanlike attitudes are the directive.

In this work, the conversation of craft in beginning design is considered through five documentary films, used as supplemental material to design projects, which expose questions of individual and collective craft, the intimacy of human acts of crafting and the idea that craft doesn't begin or end but presents itself within our actions at every turn. The pedagogical logic behind the use and selection of effective films is explored, while bringing clarity to what's at stake in the crafting of our world – quality, passion and even survival.

[1] Eames, Charles. "The Making of a Craftsman." In an Eames Anthology, edited by Daniel Ostroff (New Haven: Yale University Press, 2015), 157-159.

# Reflection and Prospection: Advocating for an integrated design foundation

AnnaMarie Bliss, PhD and Andrea Melgarejo de Berry, University of Illinois at Urbana- Champaign

Curricular changes are often made to fit certain faculty's pedagogical process or update stagnant curriculum. The causal impact of these changes is frequently overlooked beyond the foundation studio especially when considering aptitudes and attitudes of the students. This paper analyzes 8 years with three different curricular periods of foundations teaching in architectural design at an accredited public university. In each period, there are distinct teaching strategies, changes in contact hours, course loads, and topical arrangement of each foundation course over the four initial semesters. These periods encompass courses modeled on artand design studios with a bent toward technical skills and no design process in Period 1 to an attempt to offer skills through designprocess and representation in Period 2 and, in Period 3, provision of a new model of curriculum imparted to the faculty that separates concepts and theories of design from the studio aspects of conceptualization and representation. By looking at the impact specific curricular periods have on beginning design in architectural studies this paper elucidates effects not only on student performance seen in upper divisions, but also on students' future aspirations for continuing education and beyond. By analyzing the impact of design foundations through analyzing course content, reviewing faculty perspectives from upper divisions on students' design process and responses to project briefs, through a structured evaluation of admissions to and selection of graduate schools, and an appraisal of postgraduate employment, this paper will provide an insight of what other criteria must be considered in foundational curriculum redesign. Removing design silos and individual faculty curriculum biases, it is the hope that the negative impacts of a disconnected model start to work hand-in-hand envisioning a new model of an integrated sequence of design foundation courses that go beyond pedagogy and methodology and influences the success of the students and program goals.

# The Articulated Latency of the Diagrammatic Line

Mark Alan Blumberg, Auburn University

The nature of lines is to be diagrammatic, and much like the generative diagram, the line's placement within any given process of design is one of the articulated joint between latent thought and blatant actuality. Lines are not the things they represent, and therefore by necessity, they initiate the agency of the diagrammatic - that which embodies information in an optimally efficient package. One of the architect's fundamental tools of representation, the line is an instrument tunable towards a harmony between emanation and communication. It has embedded within its formation, and its subsequent existence, a diagrammatic essence that is simultaneously an historical trace and a prophetic communiqué.

Lines, as well as the creative or interpretive engagement that surrounds them, encompass the dichotomous relationship between that which resides in the realm of potential and that which bridges into a degree of actualization. Engagement of the design-space between the idea and the actualization of that idea is entirely dependent on understanding the emergent capacities and potentials of all the traces, scrapes, etches, drawings, cuts, boundaries, connections, creases, trenches, cracks and threads we have as designers at our disposal. The gravity, significance, and consequence of the diagrammatic line deserves as much focus and study as do the internalizations of figure, ground, form, space, solid, and void. This paper intends to explore an experimental pedagogy of the diagrammatic line.

# Solid / Liquid: Inhabiting the margins in the Liquid Studio through Fantasy Thinking

Alejandro Borges,Texas A&M University

According to Zygmunt Bauman, traditional notions of society as “solid” have been dissolved into a “liquid” contemporary state. The Liquid Society, embracing the individual, is defined by the characteristics of liquids such us instability, unpredictability, and mobility, allowing intersections of class, race, age, sexuality, disability and gender to manifest from within one’s unconscious.

What strategies can be implemented to re-formulate architectural pedagogy to address the Liquid Society? What fundamental elements, concepts and formal notions of “solid” architectural knowledge must be transmitted to the Liquid modern to reflect the new conditions of living? What is liquid learning?

This paper is a development of my ongoing research, which was presented on NCBDS 36. It focuses on the work of the Liquid Studio by further analyzing the new particular outcomes based on the notion of Fantasy Thinking as a strategy to inhabit the margins between the pre-conceived [solid / blatant] and the forth-coming [liquid / latent] elements of a new beginning design studio.
Architecture fundamentally originates in the creation of fiction. The creative process emerges from a fantasy that incorporates the distinct elements that generate an architectural problem. Fantasy thinking consists of image-capacity, and it is precisely our creative capacity. Without this, art, or culture, could not be generated or understood. Based on Carl Jung theories, Fantasy thinking is a way of being connected to the unconscious, the oldest foundation of the human mind, and the core of fantasy thinking is the psychological projection of the shadow and the symbol.

The Liquid Studio uses fantasy thinking as an opportunity for students to develop strategies to plug into their own creative unconscious. This studio explores basic [solid] concepts such as hierarchy, sequence, proportion, compression, expansion and transition, and merges with [liquid] individual projections as a self-discovery process.

# Optimization Tools as a Platform for Latent Qualitative Design Education of Technical Designers

Nathan Brown and Stephanie Bunt, The Pennsylvania State University

In the early education of engineers, training for qualitative decision-making is often foregone in pursuit of numerical goals, especially when teaching analysis is prioritized over design synthesis. However, curriculums that teach parametric and computational optimization techniques can incorporate abstract thinking about intangible design possibilities. The blatant objective of computation classes is to develop algorithms and “solve” parametric models through digital tools. Yet, the integration of interactive optimization strategies, which improve building performance but cannot always provide a “best” design, can foster latent lessons about design involving both tangible and intangible qualities, and can require designers to think about broad trends rather than discrete options. Curriculum that prepares engineers to integrate a range of design goals in their building designs can serve a valuable role in preparing students to think comprehensively as professionals. This paper presents initial lessons learned about the effect on design thinking of two new computation courses for architectural engineering students.

# Finding Space for Drawing: Blatant Observations and Latent Pedagogy

Simon Bussiere & Lance Walters
University of Hawaii at Manoa

Learning to draw and teaching people how to draw requires intention, tools and materials, and space to create and interact. The spaces where design drawing is taught often include both traditional classroom environments and on-site/field environments. The broad and diverse craft of teaching these skills has been explored, tested, and advanced across a wide range of approaches and methodologies over generations. While these time-tested conditions are well known – the classroom and the field – replicating them in distance learning and online educational environments remains difficult. And although course delivery methods have shifted abruptly, course expectations and learning outcomes have not.

Drawing instruction has moved into synchronous virtual sessions, asynchronous video, and time-lapse imagery. The adaptation of a multitude of tools the students use can now be developed, tested, and conveyed remotely. Sharing and delivery methods have also multiplied and expanded into virtual networks. These creative uses of familiar technology which support conventional means of delivery and evaluation have been expanded and reshaped into a new realm of potential individual discovery.

The authors of this paper present and discuss the background, methods, and conclusions of a recent introductory field-drawing seminar to explore and attempt to elucidate the potential for more intentional engagement of the physical and digital interface in foundational drawing pedagogy. A field-based drawing course comprised of 35 undergraduate students which began traditionally, then shifted to fully online mid-semester, offers a unique perspective in this changing design-education milieu, including new methodologies, tools, and processes.

# A Beginning Course in Building Technology

Mike Christenson, University of Minnesota

This paper descirbes the background, planning, and initial implementation of ARCH 5562, “Intro to Building Technology,” a required introductory course for first-year graduate students in the University of Minnesota’s three-year professional architecture degree program. The course was designed and implemented as the first technology course taken by students who do not hold pre-professional architecture degrees. In this way the course is positioned as a means of establishing a shared discourse. The course is therefore focused on a representation-based pedagogy of building technology – specifically, on drawings and models. Rather than introducing building technology through nameable systems (e. g., wood, steel, concrete), ARCH 5562 includes modules focused on plans, sections, and details.

While the study of building technology almost invariably depends on artifacts of architectural representation such as floor plans and models, representation is not necessarily problematized in pedagogy; drawings and models are conventionally treated as if they provide a transparent view of technology. A major question in designing ARCH 5562 became how architectural representation could be effectively and explicitly problematized in a building technology pedagogy. This question led the author to emphasize ways in which representation and buildings suggest mutually significant relationships.

# The Entomological Programming Project: Contemplating Relationships between Morphology and Needs

Francesco Cianfarani, Assistant Professor of Architecture
Christopher C. Gibbs College of Architecture, University of Oklahoma

The paper aims to discuss the pedagogy and the outcomes of the Entomological Programming project, and the curriculum of second year architecture studios at the Christopher C. Gibbs college of Architecture, University of Oklahoma. These studios offer a series of explorative projects focused on architectural programming, starting in Design Studio 3, Fall semester.

The Entomological Programming is the D3 five-week project that asks students to design artificial habitats to meet the needs of an insect. The first part of the project consists of documenting and analyzing the relationship between the insect and its environment and understand how its distinct and specialized anatomic parts make up a whole. This study is conducted through library research and direct observation with dissecting microscopes. Students document biological aspects and present their findings by means of hand drawings, digital constructs, and annotated diagrams. The final part of the project combines previous findings to envision an artificial habitat for each insect. The Entomological Programming project supports GCA beginning studio curriculum by reinforcing an idea of programming rooted in the complementarity between user anatomy and the built environment. The idea of programming is investigated through a mix of analytical tools aimed to support the acquisition of new knowledge. The absence of preconceived biases about the idea of habitat for an insect allows students to expand the concept of program beyond purely quantitative notions. A meaningful, deeper understanding of the occupant (may be an insect, a horse, or a plant) and its natural habitat is established by a thorough process of observation, interpretation, and exploration by means of multiple media.

# Criticism and Intent: A Design Studio Paradox

Erlene Clark, Austin Community College

In keeping with the conference theme BLATANT / LATENT, this topic explores design criticism's seen and unseen components. An analysis of criticism in the design studio, specifically concerning the beginning design student, reveals contradictions in the intent and reaction of the participants involved. Upon dissecting the processes of criticism in informal and formal contexts, an underlying paradox is revealed: explicit feedback intended to enhance a student's design process often impedes this process due to implicit cues communicated to the student.

The contradiction of explicit and implicit communication complicates the purposes, goals, and shared values of those engaged in the intensive learning environment of the design studio. Many of these intentional discrepancies can be owed to the differences and similarities of the participants. If design educators are committed to formulating pedagogical methodologies and practices which expand access to traditionally underrepresented populations into the architecture and design professions, then the nature of design criticism and its resultant behaviors must be more deeply understood.

Various aspects of implicit criticism that can emerge might take the form of cultural practices and biases. Because a personal point of view distinguishes students as designers, design faculty can nurture and facilitate students' individual goals if the pedagogical objectives of criticism are created with students in mind. However, criticism often unintentionally diminishes this individuality in beginning design students and promotes homogeneity in the studio.

Innovation in design studio criticism can manifest in many pedagogical forms. By faculty understanding the context in which criticism exists, they can implement changes to allow students to become more adept at receiving, internalizing, and benefiting from future criticism.

# Using Teachable Moments to Bridge Tacit + Explicit Knowledge

Marianne Cramer University of Georgia College of Environment & Design

This paper argues that design procedures which Sternberg (1999) equates with tacit knowledge are one of the most critical areas of teaching and learning in beginning design studios. Most design disciplines have developed a reservoir of staged process models to explicate design procedures. In the field of landscape architecture, staged process models represent the primary content in our procedural theory base (Swaffield 2002). However, the models are only a heuristic—an aid to problem-solving or self-discovery that offers a practical method but not necessarily a perfect one (Rowe 1991). What is procedurally important are the specific ways of thinking and knowing—the embodied cognitive skills we use to realize our open-ended problem-solving. Tacit knowledge differs from explicit knowledge in its difficulty to verbalize and transfer, thus students learn to design by actually doing it. It is within the learning-by-doing process that the teachable moment surfaces as an important bridge between tacit and explicit knowledge—or if you will, between the latent and the blatant. Although there is no consensus on its definition, the teachable moment is a special kind of engagement that is co-created, need-driven and opportunistic. in this century other methods of engagement have replaced it, but none of the four reviewed replace the “moment’s” intent. In the studio bridging tactics to help visualize and verbalize tacit knowledge include guided experience, group learning, opportunities to show work, telling stories, tracking lessons learned, and reinventing knowledge. Although the teachable moment could once again occur within each of these strategies, the author adds the teachable moment as a separate and very powerful tactic for bridging the tacit to explicit gap particularly for addressing lack of engagement with embodied cognitive skill sets introduced in beginning studio.

# Towards a Phenomenology of Teaching Architectural Building Structures

César A. Cruz, Ball State University

Teaching architectural building structures to sophomores and juniors tends to privilege the unseen over what is readily apparent, the abstract over the concrete, in other words, the latent over the blatant. This paper argues for a greater balance between the latent and the blatant. This may be achieved through a pedagogical strategy whereby students transcend beyond the technical details of structures and towards developing a more intuitive sense for the subject. One such approach revolves around the following characteristics of a structural system: (1) ordering system, (2) modularity and rhythm, (3) orientation, (4) alignment, (5) spacing, (6) shape, size, and hierarchy, and (7) lateral stability.

This seven-point outline is an ordered approach that binds together the whole structural system. If a student is able to design a structure that adheres to these features, then they are able to integrate the latent and the blatant of building structures. This proposed teaching strategy flows out the following concepts from the field of architectural phenomenology: subjective experience, the life-world, and phenomenology's critiques of technology and technological thinking. These concepts tell us that in seeing, recognizing, and engaging with the world around us, and furthermore in scrutinizing a phenomenon's essential features, it is possible to gain a deeper understanding of any given phenomenon.

Taking these ideas into the classroom, the salient elements of this proposed teaching strategy have been historical precedents, contemporary case studies, rule-of-thumb calculations, building walkthroughs on campus, and a capstone design project. The latter is comprised of a complete structural system for an innovative and challenging building form of each student's own conception. These techniques show students that there are valuable structures all around them, thus fostering long-term learning. They also enable students to relate calculations and concepts to accessible examples. Consequently, students begin to see and design the world differently.

# curricular continuity I the seen and the unseen

Brian Dougan, American University of Sharjah

It is both unusual and consequently rather fortunate to have a two semester drawing curriculum for design students in the first academic year. From inside such a privileged opportunity, the potential to spend thirty-weeks with first-year design students as drawers provides an interesting advantage in relation to the bigness of drawing.

I have constructed a communicable bridge between an observational drawing semester and an analytical drawing semester. The former being primarily about the drawer developing a position in the universe as a well intentioned, focused individual occupying a human vantage point with confidence and awareness. It is a course about making marks and drawing what something looks like (blatantly). The second course is a course about the drawing. It is an experience in developing an understanding about what is drawn by breaking down that something as would a scientist, in hopes of discovering an awareness under the surface. It is a course about drawing what something is (latently). The tools and procedures in the two disparate semesters are at the same time similar and different, but what is consistent is the fact that the tools are crucial and a drawer cannot do anything in regard to drawing without them.

The two semester curriculum hints at a collective whole, but only when experienced comprehensively. One of the two semesters is not sufficient to even think about entering the bigness of drawing. A graphic colloquy can introduce or suggest a position about drawing, but for drawing to be meaningful, it has to be experienced. It is an active way to empathize with life and to engage in a way that acknowledges, compliments and bolsters the human condition. This paper is about a reasonable curricular exposure to the bigness of drawing; drawing what can be seen (blatant) and what is waiting to be seen (latent).

## Repositioning Design: Unpacking a Materials & Methods Fabrication Project

Clifton Fordham, Temple University

Architectural education is at a significant juncture that presents an opportunity for the field to increase its efficacy should the moment be seized. In addition to traditional notions of design excellence, impact areas include addressing our imminent ecological crisis, quality housing scarcity, and sprawl. Many architectural educators have ventured beyond the traditional parameters of professional education, in which beginning design is intertwined, to address these topics and others. Now that NAAB is loosening its framework, schools are left to determine how to meet less proscriptive requirements – hence opportunity.

Reforming architectural education does not necessarily entail relinquishing responsibility for preparing future practitioners. For instance, most programs are likely to determine that subjects such as those associated with Materials & Methods are essential to design education. Rather, how and where subjects are addressed will likely become more fluid. This has interested the author since Materials & Methods has traditionally been presented as a technical subject distinct from design. Often, students have recognized this schism and some implications. They include the notion that building technology is subservient to design and a necessary inconvenience on the journey to realizing architecture. In design courses, the same students have understood parameters such as safety and accommodation as factors to ignore. In response, this author introduced a project (chair for a child) into Materials & Methods that compelled students to design and realize an object that would be tested with real-life implications since a three-year old would sit in them. Now that NAAB allows for boundaries between course content to blur, is a small-scale design-build project still valuable within the confines of a technology course? How can educators steeped in pedological traditions, learn to accommodate exercises that fall outside historic boundaries and expectations? Should technology instructors teach design?

# Architectural Educatuion and Cinema: Collage and the Filmic Imaginary

Caleb Eathan Generoso, University of Florida

The relationship between film and architecture has been explored in various ways in the design studio. At times, the relationship is explored through the similarities in production and understanding of visual concepts—the relationship between occupant in architecture and the camera in film, or the use of 'storyboard' for spatial narrative. In Architecture, film has also been used as a generator—a cultural artifact providing the underlayment of a palimpsest. This research further explores potential conceptual relationships between film and architecture within a pedagogical framework. It does not seek a singular and reified theory of the analogies between film and architecture. This research proposes both a more in-depth study of film and the concept of filmic thinking as a relative to architectural collage thinking. Such studies seek to offer students new ways of thinking and seeing, and to enrich already established pedagogies.

This paper examines film's potential beyond its function as artifact by paralleling its craft to that of collage craft. It examines the methods of collage—collection, synthesis, analysis—as a means of exploring architectural potentials. The collage process can be thought of as a process of thinking. In parallel, the construction of film as collage can provide additional tools and unique modes of working and thinking. The proposed filmic thinking can provide design students with not only new opportunities in design processes, but also develop linkages between their creative processes and architecture. This paper provides philosophical underpinnings for teaching filmic thinking through film analysis and filmic experiments which can reciprocate with other architectural processes. Through filmic thinking and the expansion of film as collage, students may uncover latent lessons on the natures of creativity, memory, and the architectural experience.

# Game of Hand and Mouse: A Short Exercise in Architecture Education's Self Reflection

Anali Gharakhani, Texas Tech University

Beginning architecture education, not unlike beginning education in other disciplines, must address preconceived notions of the given field. Contemporary early design education in America has been hinged on the everlasting debate between analog and digital modes of production. Although this debate has merit in the realm of fabrication, it is a misconception in design pedagogy. In this debate, two opposing themes are established: design by hand or design by mouse. This epistemological misreading, commands a simplistic view of foundational education that is not rooted in the reality of practice or academia. The relationship of tactical coordination between the drawing media and the author associated with the analog system paints a bleak and laborious picture of the architect. In 1982, Autodesk released their first version of Computer-Aided Design software (CAD). Earlier versions, by different names, were released in the 1970s but not at the consumer level. By 1994, Autodesk was offering trainings worldwide. The process of digitizing old architectural drawings and producing new drawings by CAD only then began. While the digital age was vastly welcomed, there were certainly groups of designers and educators who remained skeptical and uncertain of the changes. These groups have persisted a singular position since. Although the topic of discussion has gone from the digital to the post-digital for some time, the "analog crew" continues to argue for a return to the twentieth century architect. This nostalgic latency has resulted in blatant disregard for the natural evolution of design education, particularly in the foundational years. In this paper, the institutional nostalgia of architectural education is explored in an attempt to provide grounds for the necessity of evolutionary embrace of contemporary design techniques.

# Illustrating the Dialectics of the “Blatant” and the “Latent” through Translating Drawing Notations in Music and Architecture

Charlott Greub, North Dakota State University

Music versus noise and architecture versus formless matter are traditionally framed in contrasting terms. Music and architecture embody cultural ideas of unity, harmony, and structure. However, some twentieth-century composers have critiqued these ideas with explorations into silence and field. While discussing parallels between notation drawings and formlessness, we discuss pertinent works by Daniel Libeskind and John Cage.
This presentation discusses the spatialization of musical time through the student’s transdisciplinary experimentation with the aesthetics of musical formlessness. The translational interchange between music and architecture illustrates the dialectics of the “blatant” and the “latent.” For illustrative interdisciplinary beginning students, a second-year design studio project a Music Center for the Granary District in Salt Lake City revolves around thematic elements of silence and field. Rather than the ‘obvious’ – site, massing, program or typology – the design process begins with the “latent” relationship between music and architecture with respect to experience, representation and performance.

The spatialization of musical time deals with something not ‘obvious’ but merely latent and translatable through spatial configurations. Students explore the potential translation from music into architecture by visualizing abstract notations like scores and plans. In the ensuing creative back-and-forth process, the interchange between music and architecture enables constant reinterpretation and editing from 2-D representations to models and vice versa. In fully operationalizing this translation process and creating their artefacts, students learn to overcome the mimetic urge to re-present or copy typical models of architectural practice.

# Field Position: Studio Typology through the Student Lens

Liane Hancock, University of Louisiana Lafayette
Kiwana McClung, University of Louisiana Lafayette
Kristen Lyon, University of Louisiana Lafayette, Student

In beginning design studios, faculty endeavor to create an inclusive, collaborative, and creative environment for all. This paper discusses how the design of the open studio typology can help or hinder the studio learning environment. The open studio, much like the open office, is perceived as a non-hierarchical environment that promotes conversation and collaboration. The expectation is that its openness facilitates conversations that would not be possible in smaller rooms. This perception ignores how certain limitations within open spaces can manifest demonstrations of spatial power and tribalism.

The factors shaping the studio environment are complex and can affect student experiences within the design studio. This paper analyzes external spatial factors, internal personal factors, and interpersonal factors within our teaching spaces. Additionally, this paper frames the analysis of the studio space through a survey of published articles evaluating the effectiveness of related spaces such as open classrooms in K-12 classrooms and corporate open offices. The purpose of this paper is not to propose changes to typology, but to emphasize that the general design of studio spaces has primarily stayed the same for over a century while the practice of architecture, teaching methods, and student body make-up have changed substantially. In our opinion, it is time to take a thorough look at how the space we teach in also needs to change so that we can level the playing field across the discipline.

# What Toto Knew: A Study in Transparent Pedagogy

Liane Hancock, University of Louisiana Lafayette
Kari Smith, University of Louisiana Lafayette

Moving to online modality during the COVID epidemic provided an opportunity previously unthinkable – teaching studio remotely. To be effective our faculty took a deep look at our teaching techniques, considering how we might best communicate with our students. As part of our reflection, we became aware that assignments often are too complex and filled with confusing vocabulary – and that explanations conducted in face-to-face meeting were much less easily explained online. By simplifying and clarifying, we were able to pull back the curtain on the mystical character of content delivery and to make genuine connection through an equity of experience for all students, building confidence across the entire beginning design studio.

Fundamentally our position is that transparent pedagogy places the focus of design on individual conceptualization, narrative, reasoning, and self-expression as the place of sophistication. The more openly and honestly a faculty member presents their teaching rationale the more likely all students will feel comfortable enough to fully engage in learning within the studio while expressing their own character. Transparent pedagogy removes skepticism, instead opening the door for fertile discussion. At the broader scope, this transparency in pedagogy aids the entire faculty in developing a coordinated curriculum with clear and measurable learning outcomes along the entire journey. While some might fear that it takes the mystique out of teaching – we feel it simply pulls back the curtain on our methods, allowing students to have frank conversations and be active participants in our students' education.

# Exploring Life Center Design Through Standardless Material

Jonas Hauptman, Virginia Tech

The goal of this paper is to extend the principles of Life-Centered Design (LCD) and to reveal latent pedagogical opportunities through three design-build projects. Life-Centered Design is defined as a design perspective that seeks to create symbiotic relationships between all impacted forms of life. LCD equally considers the user of a design and the living system(s) constituting the design. This consideration makes room for a deeper exploration of both the biological underpinnings and the application of end-use of a material in any design process. The three projects are architectural follies using bamboo as the primary material. The projects move from generative/iterative design to realization through a technology-aided fabrication and build process. Through this process students effectively explore symbiotic design solutions that meet the needs of human users while adapting to the natural, often irregular quality of bamboo. The blatant pedagogy of building something offers students the opportunity to directly engage material and build basic design skills such as three-dimensional computer-aided design modeling, design computation, and physical prototyping. The latent pedagogy is activated through the need to adapt and design to the endless variation in a material such as bamboo; there can be no preconceived stock solutions as each piece of bamboo must be uniquely addressed. Collectively the projects offer a series of discoveries vis-à-vis potential symbiotic relations between the taxonomy of bamboo and the designers' intent.

# Probing the Latent and the Blatant: A Didactic Tool for Addressing the Dimensions of Culture in the Design Studio

Marianne Holbert, AIA, University of Colorado Boulder

Does design education today truly empower the next generation of designers to engage in multicultural contexts? While conversations around justice, equity, diversity, and inclusion have become more common, what tools and practices are there to support these discussions in the design studio? For first-generation and underrepresented beginning design students, the adaptation into college coupled with learning the seemingly tacit rules of studio culture can be challenging. The studio often has both a visible and invisible culture- stated and unstated values, attitudes, and norms derived from the social dynamics of the school and faculty. These visible and invisible elements inform culture which is integral to interaction and learning. Often, values, attitudes, and priorities are modeled and/or perpetuated among community members often without recognizing their implications. How, then, can faculty and students reflect on the latent and blatant values and practices present in the design studio? Will taking inventory of the intangible cultural forces, value systems, beliefs and the invisible doctrine(s) of the studio better support beginning design students and the studio culture at-large?

This research focuses on the questions above through the examination of cultural dimensions in the design studio to support more culturally sensitive environments and the individuals within them. This presentation shares the Cultural Inventory Tool for Studio (CITS), a didactic survey tool. It is designed for faculty, students, and designers to examine, evaluate, and discuss the values that influence how people work, think, and engage in diverse social, cultural, and professional situations. This pedagogical tool allows users to gain feedback and insight into the cultural dimensions at play in the studio to advance cultural consciousness in the design curriculum. This presentation will share the methodology of the tool and how it has been particularly beneficial for beginning design students and faculty.

# Abstract to Real and back again: From Drawing Light to Shaping Space

Lee-Su Huang, University of Florida
Lisa Huang, University of Florida

"While artists work from the real to the abstract, architects must work from the abstract to the real. While art may legitimize itself as an object or an event, architecture dissolves into a blur of buildings. Architecture, under all of its constraints of engineering safety, function, climate responsibility and economy, sometimes transcends to inspire us with ideas in space and light qualities achieved in the abstract."
-Steven Holl

The difficult balancing act of achieving Holl's abstract expression through tactile execution is at the core of an architect's skills in the realization of transcendent architecture. This paper presents a sequence of exercises that spans the first 8 weeks of an introductory graduate design studio that seeks to instill in students the ability to experiment, iterate, research, synthesize, articulate, and execute individual viewpoints on a design issue.

The project starts with an exercise that is a speculative drawing of light and shadow, coupled with provisional notions of materiality and tectonics to uncover latent possibilities of phenomenological effects and poetics. The second phase is an intense workshop of iterative material and assembly studies working with "real" building materials and learning to use their specific properties to manufacture material effects. Phase three takes these experiments and reimagines them at the scale of a building fragment, while introducing clearer notions of enclosure, aperture, and structural/tectonic systems. A large physical model at ¾" =1' scale is constructed to understand tectonic hierarchies and assembly sequences. The project culminates in a full-scale construct in which students engage issues of lead times, precision, tolerances, as well as a newfound respect for craft and labor. Through all the efforts and processes between latent and blatant methods of engaging design issues, the goal is to end up somewhere in between, in that elusive pursuit of poetry through light and matter.

# Prototyping the known, designing the unknown: Kinetic architecture as pedagogical device for teaching adaptation and integration

Lee-Su Huang, University of Florida

Open-source development frameworks have revolutionized the way designers of all disciplines develop software, hardware, and even fund projects. Led by the "Maker Movement" made possible by open source hardware and software, these non-proprietary rapid-prototyping technologies substantially lower the barrier of entry to the development of complex integrated systems, in both the physical and digital realms.

To engage in this type of integrative making requires fundamental technical skills drawing from multiple disciplines including physical/digital fabrication and prototyping, digital/parametric modeling, mechanical engineering and design, as well as electrical engineering and circuit prototyping. Students were asked to explore the design, simulation and fabrication of kinetic architectural prototypes, responsive building systems, and intelligent skins. Using Grasshopper, Firefly and the Arduino microcontroller as creative and technical tools, students were taught fundamental skills in electronical and mechanical prototyping to complement existing skills in digital modeling/fabrication. Starting out with simple sensors and actuator movements, students eventually developed a kinetic prototype that evolves and adapts to specific architectural desires. These were built as "actual-scale" physical/mechanical/electronical prototypes, accompanied with speculative drawings for deployment at an architectural scale.

While models, drawings, and representation of architectural space can be abstract, fuzzy, and left open to interpretation, the precision and exactness required to make things work mechanically and electronically is literal and unforgiving; it either works or it doesn't. Another primary learning experience was the realization that substantial iterative testing and prototyping needs to be an integral part of the development process. Parallels can be drawn with traditional 1:1 design/build projects where issues of budget, size, structure, scheduling, and constructability are at the forefront. This interweaving of techniques from multiple disciplines compares similarly to the integrative skills architects are required to wield in real practice, as well as the increasingly multi-disciplinary world of the future that requires agile thought, integration, and adaptation.

# Does the appearance of typographic forms have intrinsic meaning?

Richard Hunt, OCAD University

Typography, as a means of communication, is dependent upon language. Graphic design in its aesthetic sense, depends on form. These two aspects of typography are both separate and connected. What a word looks like (in terms of typeface and treatment) and what it means (to those who understand the language and script portrayed), are ineluctably intertwined. To those unfamiliar with a script, typography is simply form.

For students who do not have a cultural grounding in roman typefaces, the understanding of the cultural meanings of different formal treatments of typographic forms is likely to be unclear. However, there are some aspects of typography that are not, generally, dependent on culture. Some are dependent on the human physiology and psychology of perception, as well as the constraints and affordances of media.

Inviting students to consider these similarities and differences, by analyzing the relationship between meaning and form, and asking them to employ them in creative exercises, can help them to gain greater awareness of other cultures, and to more confidently and effectively use the scripts that they use in communication design, and reach a better understanding of how typography is perceived in any script or language.

This paper considers the relationship between denotative and connotative aspects of scripts in Roman and other scripts, particularly Perso-Arabic and Chinese, cultural context, semiotic theory, Gestalt perception theory, and the relationship of sound symbolism to typographic form.

# Building with Bloom: Developing Student Metacognition in Beginning Design Studios

Nate Imai, Texas Tech University

This paper examines how Bloom's Taxonomy can provide a pedagogical scaffold for students to achieve higher order thinking skills in beginning design studios. It first provides an overview of the concept of metacognition as it relates to architectural education. It next outlines the intentions behind Benjamin S. Bloom's original 1956 taxonomy before discussing the more recently updated version that uses the verbs Remember, Understand, Apply, Analyze, Evaluate, and Create to measure the depth of students' learning. By integrating Bloom's Taxonomy in the design of foundational studios, this examination argues how course objectives and criteria for analysis can be made more clear and students' cognitive skills can be increased.

A second-year design studio for four-year Bachelor of Science in Architecture students at Texas Tech University serves as a case study for analyzing the methods and results of a course that incorporates Bloom's Taxonomy at the foundational level. In line with the conference theme of "BLATANT | LATENT," the investigation examines how the study of explicit and tangible architectural precedents can be leveraged to increase awareness on how we teach and learn about design and for students to think conceptually within the realm of the intangible. The paper will specifically focus on how Bloom's Taxonomy can be incorporated in a beginning design studio's curriculum, instruction, and assessment through the design of its syllabus, assignment briefs, and grading rubrics respectively to promote higher order thinking at multiple phases within a foundational course. The paper concludes with a reflection on the results of the studio and speculates on ways in which Bloom's Taxonomy can be integrated in the design of future courses for increasing students' cognitive skills at the beginning design level and beyond.

# Algorithmic Thinking in the Beginning Design Process

Meg Jackson, University of Houston
Michael Gonzales, University of Houston

Algorithmic strategies are both pragmatic and abstract. These systems allow beginning design students to develop complex and intricate results by analyzing the design problem as a series of simple rule-based systems. The design process is understood as a system of procedures, constraints and variables. This type of rule based system follows a process of precise ordering systems, however, both organizational and operational, it also has the ability to be highly calibrated yet adaptable. Understanding form, geometries, and materials as sets of procedures as opposed to objects, allows the designer to have more control over variations, the iterative process, analysis, performance, and experimentation. Algorithmic thinking is a systematic presentation of form as opposed to a digital representation of form. Its interactivity reveals the latent potential and possibilities of the system while retaining control of the process.

Algorithmic thinking, used as a method of problem solving, has proven to be an effective strategy for teaching fundamental design processes in several contexts. Logic can adapt in scale and specificity so it can anticipate many design applications and has the potential to be both endlessly variable yet accessible to beginning design students. Teaching beginning design as an understanding of procedural systems is at the intersection of the blatant and the latent in the design process.

The case studies in this paper represent a series of intensive and short-duration investigations undertaken during the past several years that rely on algorithmic thinking as a multi-scalar tool to introduce the rigor of the design process and as a way to explore form, space, and material.

# Prioritizing Design Behaviors: Establishing Studio Culture in Online and Hybrid Studio Formats

Meg Jackson, University of Houston

When studio moves to an online space and access to materials is restricted, how does one introduce beginning design students to the discipline? Is studio studio when no longer a shared tactile experience? Without the twenty-four-hour physical, communal space, how does one translate and establish studio culture?

At first, the task was focused on how to replicate the former studio environment online. However, this decentralized format requires a more deliberate focus on intangible behaviors. We had to make a conscious effort to identity what latent skills were most important to instill in our beginning designers. The sudden shift in modalities forced us to reflect on the importance on studio culture.

This paper identifies, outlines, and reflects on the design behaviors that should to be prioritized to create a rigorous studio culture for online and hybrid beginning design studios.

In the meantime, there are often discussions about what we were missing in the online format, but what did we gain? The advantage of the change in format was the forced reflection and examination on architecture education. Now, as we slowly move towards more in-person learning, what have we learned about adaptability and accessibility, what has changed, and what practices and methodologies learned online do we take forward with us?

# The Making of Things: A Primer for Early Design Education

Frank Jacobus, University of Arkansas
Angela Carpenter, University of Arkansas
Rachel-Smith Loerts, University of Arkansas

Often young designers have trouble understanding the relationship between form and content. Much of their early learning has to do with the architectonic *what*, the thing itself, whose general language has been clearly defined in the discipline. Less defined are the effects of the architectonic assemblage and how it acts as a natural language. Repeatedly, these architectonic effects are left in the realm of subjective conjecture, or vague explanation, leaving students ill-prepared to develop mastery of form's content and therefore unable to understand its inherent latency.

This paper discusses several key concepts that emerge from a new book on design foundations titled The Making of Things: Modeling Processes and Effects in Architecture that help address these essential beginning design issues. By establishing a taxonomy of architectonic form, we clearly define the relationships between a comprehensive array of tectonic assemblies. In addition, we directly address the perceptual effects of common formal maneuvers, offering clear and descriptive examples of how form's language operates. This fundamental pairing of formal effects and architectonic relationships opens the potential for direct explicit dialogue between students and teachers, creating a key conceptual foundation for beginning design students.

# Your Body is a Blatant Object: and Damn It's Latent

Frank Jacobus, University of Arkansas
Rachel-Smith Loerts, University of Arkansas
Angela Carpenter, University of Arkansas

This paper challenges the conception of "pre-object conceptual fluidity" as proposed by Axel Kilian and argues that there is no thinking without form and no such thing as the "pre-object". We discuss the dangers of asserting a "pre-object" reading of architectural form and compare it to the centuries-long mistaken and damaging separation of mind and body which Dewey and others have thankfully restored as "mind-body". We argue how a misreading of forms, and miseducating about form, rather than something inherent in forms themselves, has created the problem of pre and post-object conception. We also argue that early design education often creates formal readings without imagination, and that this is precisely what needs to be overcome in order to provoke a renewed awareness of object latency. Indeed, it is not in the "pre-object" design stage that we become conceptually fluid, but rather it is a deep reading of objects themselves that allow us to be so. We propose that our students look at objects more, not less. We propose that they look at them deeply to understand their relationship to other phenomena outside of our discipline. Finally, we contend that the object is beautifully blatant (if designed well) and powerfully latent if considered deeply.

## Design Justice

Donna Kacmar, University of Houston
Meg Jackson, University of Houston

The Design Justice course emerged out of the larger context of changes needed in higher education, in exchanges with faculty across the three programs in our college, in support of our students, and as a way for all of us to test new pedagogies and spaces for learning and teaching. We focused on ensuring that faculty and students would learn together, create a safe space for discussion and dialogue, and work across disciplines and scales. We believe this course was a space where hard conversations could begin, but certainly not end.

We worked together to identify materials that would spark dialogue and new ideas about design justice -- and bring new voices to the question of design. The chapters in the book “Design Justice” by Shasha Constanza Chock gave us a framework for our explorations. All of the course content was explored at multiple scales -- from that of the city, to the community, to the block, to the building, and the object -- providing another way to think about design justice and how it impacts us all. Exposing both the faculty and students to diverse media on issues of design justice and education was one of the benefits of teaching and taking the course.

The course used a range of methods to create collective engagement on diverse topics. Interdisciplinary student teams researched a chosen topic and shared its discipline relevance with their own personal experiences through the lens of design justice.

This course is a starting point. Collectively we all learned from each other, faculty learned from students, and we were all exposed to new ideas, projects, and practices. One of the most significant beauties of teaching, is that we learn as much from our students as they learn from us.

# Where the River Meets the Sea: Elevating Technical and Experiential Learning in the Rising Studio

Kristen Kelsch, Louisiana State University

Drawing upon the example of a first-semester design studio, the Rising Studio, this paper presents the unfolding of formal and non-formal studio activities anchored around water and our changing relationship to it. Through selected assignments, this paper describes a course which challenges students to navigate the interplay between the built environment, people, and water. Course activities oscillate between coordinated, instructor-led exercises and personally driven reflections. Recognizing that every person's understanding of and relationship to water is something which gradually develops over time, the studio introduces objective, technical knowledge while illuminating connections formed during field excursions or over years of direct contact with the environment.

The aim of this studio is for students to construct a narrative as well as an intervention which registers change in a dynamic environment impacted by the presence of water. Along the way, literary works, specifically Elizabeth Rush's Rising Dispatches from the New American Shoreline, ground discussions. Regional trips within the Mississippi Delta allow students to witness change directly. The outcomes of these adventures and discussions are paired with aleatory tools and techniques inspired by William Burrough's cut-up method in order to help students produce a series of designed architectural artifacts. Ultimately, this paper advocates for integrating formal and non-formal learning experiences into foundational design. It also calls for embedding explorations of water-related ethical challenges into beginning design architecture curricula given the climate challenges emerging designers will face. The studio's theme stems from the instructor's eight years working with Ripple Effect Water Literacy Project an education nonprofit which envisions a future where all teachers and students have the knowledge, skills, and ethical grounding they need to strengthen communities in an era of climate change and sea-level rise.

# Tangible and Intangible: Best Practices in Coordinated and Independent Studio Pedagogies

Sarah Keogh, PhD, Ball State University
Chelsea Wait, University of Wisconsin-Milwaukee

Equity and inclusion play a significant role in first-year design curriculum. By necessity, beginning architectural studio coordinators tend to assume a common in-coming level of critical thinking skills and creative proficiency in a studio environment. Yet, this set of common assumptions can reinforce an educational approach that can and does leave some students behind, particularly because it takes social and cultural capital to take imaginative risks, meet challenges creatively, and be nimble as students work through their studio projects.

Focusing on inclusivity, equity, and retention of a diverse student body, this paper employs educational ethnography, an inductive and descriptive approach to analyze students' learning experiences. Using this method, this paper assesses and compares two distinct first-year architectural design pedagogies, each demonstrated in a long-standing university program: one in the School of Architecture and Urban Planning (henceforth SARUP) at the University of Wisconsin – Milwaukee; and the other in College of Architecture and Planning at Ball State University (henceforth CAP).

SARUP employs a coordinated approach in which all sections complete a singular set of scaffolded projects on a synchronized timeline, set by a single year-level organizer. CAP uses an independent approach relying on individual instructors' professional skills and interests to define each studio section's set of projects. While these two approaches share a set of similar teaching techniques and values, each presents a unique set of blatant and latent advantages in relation to inclusivity that this study will explore. Additionally, this paper will uncover challenges to supporting an inclusive learning environment embedded within each pedagogy.

Through a comparative analysis and thick description of these two approaches, this paper presents best practices and potential concerns from both formats. Eliciting these best practices is useful to broader design education as the field directly addresses equity, inclusivity, and retention.

# Between the Tangible and Intangible: Learning Spatial Understanding Online

Yoonjee Koh, Boston Architectural College

The onset of remote learning has shifted how architecture is taught across many institutions. Propelled by the ongoing pandemic, the shift in teaching format brings forth questions that have perhaps existed in the architectural discourse; questions of tangible versus intangible, latent versus blatant, and digital versus physical have risen to the surface with remote and hybrid forms of teaching. In 1997, Peter Martorella described technology in education as “a sleeping giant” that would transform how materials are taught. Over the last two decades, the functionality and availability of technology has changed social behaviors of the everyday user, including the architectural student. From the chalkboard to zoom, drafting to Rhino, and physical modeling to BIM, technology has greatly altered daily instruction in the architectural classroom. If the study of architecture explores the built and unbuilt environment, how do lessons to the beginning design student need to be shaped and formed with the current change in teaching format? Does the online classroom replicate forms of onsite instruction or introduce new ways of instruction? What is latent spatial knowledge that one may build upon? Also, how do existing media enable or challenge such methods of pedagogy? Furthermore, as tools and media continue to evolve, what questions should educators be asking? With these questions in mind, this paper seeks to share lessons, processes, and outcomes from an intermediate online architecture studio course taught in the School of Architecture at Boston Architectural College.

# Learning Latency through Blatancy: Introducing Digital Realism in an Early Design Studio with an Emphasis on Imagination and Play

Julie Kress, University of Tennessee, Knoxville

Realism is sometimes an obstacle to creative thinking for the inexperienced design student. The moment a surface is labeled “brick”, it appears unbreakable. Add a door or a window into the mix, and they seem unscalable. For this reason, a logical studio brief might guide students through a series of abstract explorations, steadily gaining realism throughout the semester. In contrast, the 2nd year design studio discussed in this paper, began with detailed digital replicas of real-world sites to be gradually defamiliarized over the course of the semester. This approach encouraged students to be nimble digital creatives that use 3D models as an exploratory design tool instead of merely a method of final production. It was expected that they would both model reality and break it, to uncover new, otherwise unimaginable possibilities.

The studio takes inspiration from the 2017 Exhibition, Souvenirs: New New York Icons, which featured 59+ objects designed to reimagine the global perception of the city. Many of these models merged icons of the everyday lived experience like trashcans and bicycles, with the built urban context. In the spirit of this exhibition, students were sent out into the city of Knoxville to collect and measure a souvenir of their choice, which was a building scale “chunk”. This chunk was 3D modeled in extreme detail, including bricks, graffiti, and even loose trash. Souvenirs are precious objects and the immaculately modeled chunks seemed resistant to change, which set up the premise of the rest of the semester to uncover as many possible realities within the resistant object as possible. Students gained a greater understanding of how realism is achieved technically, but also how realism can be disrupted.

Through a series of drawing, rendering, and digital modeling exercises, this studio served as a protype for how robust technical skills can be introduced early on without compromising student’s ability to engage in qualitative, messy methods of expression and ideation.

# Collective Composition: Context as Primary Character in Beginning Design Pedagogy

Deborah Ku, Auburn University

Practicing architects and educators know good architecture results from the design of more than just singular, isolated objects. But Western design education still hasn't extracted itself from the lineage of Bauhaus approaches to design and composition centered around form and material, and focused on abstract sculptural constructs. In an attempt to wrench free from this conventional focus, Collective Composition asks students to consider abstract formal compositions individually but also as a collective group. They must adapt and respond to contextual clues and are given opportunities to activate the ground plane, allowing "spaces between" to become active characters in a spatial dialog.

The Bauhaus design pedagogy developed a Common Preliminary Course—commonly a Foundation course in many modern architectural design programs—that was to encompass all arts and design disciplines into one broad class. Instructors were masters and students were apprentices; learning was one-directional. Building on this solid, common Foundation education, Collective Composition extends the model and points to alternative futures for Design Foundation.

As the first, fully three-dimensional exercise, Collective Composition considers several contexts for design thinking and making. Disciplines from architecture and landscape architecture to interior architecture and urban design are synthesized through three inter-related and cumulative phases of work. First, Introduction to Space asks students to individually translate a two-dimensional graphic composition into an open-ended and abstract construct. Second, Collective Composition maintains an emphasis on spatial composition, but shifts scales from the individual model to a grouping of five. Students test, rotate, rearrange, and adapt their individual models in response to making the Collective Composition stronger. They find relationships between individual models, and emphasize them by manipulating the ground plane, further activating interstitial spaces. And finally, Coordinated Drawings asks students to represent their collective compositions through drafted orthographic drawings. Here, they continue drawing their own constructs always responding to adjacencies and how space is shaped both within and between.

As in professional practice, collaboration and coordination are integral to the success of the Collective Composition project. This dependency also aims to foster a supportive studio culture that demonstrates to students the importance of active dialogue and negotiation—in a 35-person studio, students have access to many more voices than a single instructor might be able to convey even from her own broad and diverse practice.

Space, not just form, is a central medium of the discipline and physical contexts, not just physical materials, are critical drivers for spatial composition. Sites are not just places to arrange forms and situate programs; they are generative settings and processes to create experience. Finally, students can be co-collaborators and co-educators as they work together, growing a healthy and positive studio culture.

# Form Follows Dual Functions: An Inquiry of Formal Design

Jongwan Kwon, Kansas State University

As much as the phrase “Form follows function” seems cliché, the active pursuit of rigor and articulation through constructing a close relationship between form and function is deeply embedded across our architecture pedagogical beliefs. Hence, the program or purpose of the design is typically predetermined and given to students at the beginning of the project. However, this paper poses a question towards this perennial principle, especially when form yields to follow a particular single function. How can students develop a formal idea that tackles the issues of specificity and adaptability? Today’s social, cultural, and political challenges that architecture encounters set an opportunity to reconceptualize design pedagogy to incorporate greater flexibility, adaptation, accessibility, and inclusion.

The underlying pedagogical intention of the Dual Artifact project is to establish an extensive understanding of the association between form and function during early architectural education. It not only adopts the notion of function being changeable but also asks students to define what the functions are from personal observation. The artifact is a spatial object that elicits the intended engagement and enhances the quality of two different behaviors. The design process includes documenting the student’s body dimensions and movements that become the genesis of the object’s form without preconceived orientation or figure. By synthesizing multiple incompatible sections into a single volume, this project oscillates between tangible and intangible, actual and perceptual, and physical and digital. The amorphous and figurative quality of the artifact allows students to rethink form-finding as open-ended exploration and learn how to iterate and adapt form.

# Title: First-Year Design Students' Readiness to be in Different Disciplines: An Investigation of the Skill Readiness and Preparedness for the Coming Years of Study

Katrina Lewis, Kansas State University
Byungsoo Kim, Kansas State University

In the first year of study for beginning design students in the U.S. typically learn the fundamental skills of drawing, modeling, and design process. Beginning design students must be proficient in the essential design skillsets, which include both hard skills and soft skills. Hard skills (drawing, sketching, making models, design process) are crucial technical skills evident in their project outcomes (blatant). Even though soft skills (time management, communication, flexibility) are not apparently shown (latent) in their outcomes, they have been emphasized to ensure success in academics as well as in their professional careers. The purpose of this study is to better understand the first-year students' perception of their preparedness to succeed in their subsequent years within their selected discipline, based on their confidence level of their hard and soft skills. Also, this study aims to better understand the student's reasons of feeling prepared for the next semester/year.

At the authors' institution, beginning design students have been learning the fundamental design program for almost 30 years. In their first year, students study environmental design as a cohort. Students do not begin to concentrate on their chosen design discipline until their second year in the five-year program. Surveys to collect the students' teaching evaluation comments have been conducted for 15 years (28 surveys) for thematic analysis. The paper presents the synthesized results from the collected data and suggests several aspects to consider when designing a curriculum for beginning design students. The results of the research and the suggestions will benefit the first-year design program instructors/directors who are responsible for developing curricula and individual courses.

# Interdisciplinary Collaboration in Professional Design Learning with Early Design Students

Katrina Lewis, Kansas State University
Katie Kingery-Page, Kansas State University
Hyung Jin Kim, Kansas State University
Neal Hubbell, Kansas State University

This is a follow-up study of three previous presented papers (NCBDS 2012, 2016, and 2018) featuring the pedagogy of inter-disciplinary learning in second-year design studios across two curricula. Learning what works best for collaborative teaching across our two disciplines has been an iterative process. Unique to the latest iteration is the context: a community-based design project for the residents of the post-Civil War African-American settlement of Nicodemus, Kansas, in fall 2017 (presented 2018). For the course exercise, second-year students in interior and landscape architecture learned firsthand about community needs and goals from two Nicodemus residents who had deep local knowledge and scholarly understanding of their town's history. Students then worked in interdisciplinary teams to propose an overall site design: a compact residential campus of small homes, community buildings, and outdoor community spaces.

The authors held a semi-structured, retrospective focus group interview among students who had participated in the interdisciplinary studio in fall 2017 in order to capture students' reflections on learning and student design outcomes (both blatant and latent) from the exercise in fall 2017. The focus group questions opened conversation on student design process, designing at various scales from the interior to the context of the site, benefits of being part of a multi-disciplinary team, evolving design sensibilities since the exercise, and general reflections. Focus group data was analyzed using a qualitative content analysis method of noting to look for dominant themes in the semi-structured discussion. In this fourth paper, the authors discuss in-depth how this early studio collaboration between two disciplines affected students' capacity for cross-disciplinary collaboration and contributed to unexpected (latent) learning and early career outcomes.

# People Powered Projects!

Fiona Lim Tung, University of Waterloo and University of Toronto

The beginning design student is often introduced to architecture via a series of abstract exercises intended to reframe their preconceived notions of what architecture is and what it could be. While this approach has incredible value in producing interesting, and often spatially unexpected moments these projects do not directly confront the question of why we want to undo their assumptions about architecture or why the built environment currently looks the way it does.

Each student brings diverse experiences, perspectives, and abilities to the program, and those insights are often dismissed in favor of creating a blank slate. To not pass judgment on the buildings that students have encountered and admired up to that point reinforces that their experiences matter. The critical reflection of architecture is then introduced with the students' awareness and permission, giving them agency over their learning and a point of reference to work from. Through a sequence of ethnographic design exercises, the social and cultural factors that have historically shaped the typologies and standards that we encounter daily come to the forefront.

People Powered Projects! avoids top-down teaching with a strong focus on collaboration and peer-to-peer learning. People-driven design and analysis also makes students acutely aware of who has been historically excluded from architectural history and contemporary practice. People Powered Projects! empowers their critical voice and positions the beginning design student as an expert of their own experience of architecture and the built environment. This builds confidence in design, analysis, and critical reflection, and makes clear how valuable – and valued – each voice is, even (especially) as a beginning design student.

## The Plays - Spirit and Material
## Spatial Explorations with Froebel Influences

John Linn, High Point University

Moments of engagement and realization provide seeds for expression and ideation. Purposeful activities may foster habits of recognition and discernment. As an artifact may be measured by an ideal, and an ideal may blossom from its hosted intuition, moments of learning attach to the life from which they spring in play and in the student. Notions of the nature and importance of play as developed by Friedrich Froebel offer relevant modes of discovery for the penetrating student mind. Pertinent acquaintance with Froebel's philosophy and examples of undergraduate exercises offers a glimpse and illustration of such interpretations.

# Discovering Latent Creativity Playing with Concrete Masonry Units

Andreas Luescher, Bowling Green State University, Ohio

Learning by making is a fundamental principle in architectural education, particularly regarding the important interrelationship of materials and construction techniques. This exploratory learning process offers the opportunity to break away from compartmentalization and bring forth latent possibilities while in the process of structure formation. Playing with concrete masonry units emphasizes the hidden options for interplay, interaction, interpretation, and integration. Choosing CMUs as a material allows one to discover many formerly latent possibilities by testing the visual, tactile, and physical properties of this basic building material, which makes it unique compared to other design and construction projects. Their texture, their heft, and all the ways in which CMUs are joined together result in the expansion of a designer's conceptual range and design intelligence. This helps students understand the basic foundations involved in design, construction, and engineering. It places the consideration of materials at the beginning of the design/build process, not at the end.

This paper examines the hidden creativity behind the blatantly sturdy cement blocks which can occur both during the design and building phases, and, most importantly, the varied ways in which the students can manipulate mass, volume, and space. This paper also explores the experimental instruction which can occur in a lab setting, highlighting the connection between the blatant studio environment and students' latent use of sensory organs to determine which approach awakens the student's ability for unique design thinking, and promotes their design investigations into concrete masonry units.

# THE HEROINE'S JOURNEY: Aligning a Career Path with Personal Values

Sara Maloney, Sara Maloney Design
Brigid O'Kane, University of Cincinnati

This paper reveals the career paths of Sara Maloney and Brigid O'Kane, who both navigated professional challenges within the design field. They experienced pivotal moments and transformative change along their individual journeys. This led to the realization of necessary changes within the educational system for beginning design students.

Sara's journey starts as a freshman entering college dreaming of becoming a car designer. She met Professor Brigid O'Kane who was teaching transportation design, and with Brigid's encouragement Sara was further convinced to pursue this path. She received her bachelor's degree in design which led her to several career opportunities. However, Sara found herself challenged with corporate politics and extraneous waste. Sara left the corporate world and embarked on a personal journey that shocked her family and friends. She retrofitted an off-grid minibus and traveled across the country. Forging a new path, she took a leap of faith which transformed her outlook on life and her ideas about design.

Brigid's journey begins at General Motors where she had a fantastic career as an automotive designer. Her perspective on design drastically changed after the alarming experience of witnessing coral bleaching while scuba diving. Through the intentional cultivation of a path, Brigid reshaped her philosophical views and values. Now as a professor teaching design she has a newfound perspective on the necessary changes needed to evolve design education.

Educators, leaders, and mentors have a powerful impact on shaping the trajectory of a young designer's career. Part of that responsibility includes helping students transform as they seek out personal values and develop purposeful goals. This paper outlines three critical approaches to achieving these objectives; Reflective Thinking, Experiential Education, and Transformative Learning. Some of these methods emerged through Brigid's and Sara's experiences. They have also been vetted through direct implementation within courses that Brigid has taught.

# Discovering the unexpected: from everyday life to the construction of architectural space

Patrizio M. Martinelli, Miami University (Oxford, OH – USA)

The presentation is focused on the experience developed in the first-year studio during the COVID-19 pandemic, which affected the teaching strategies, tools (iPad, Zoom, Miro), and spaces to work: not anymore the studio, but the domestic environment. In this context, students explored and revealed the potential for design hidden in their everyday life.

1. THE MASK: IDENTITY AND PROTECTION

The first assignment has been an investigation on the theme of the mask, with clear reference to the device that since the pandemic has become a common object of our everyday life. The intention has been to reinvent the mask as a wearable device with the purpose of protection (in its widest interpretation) and representation of identity.

2. STILL LIFE AND ARCHITECTURAL SPACE

The project was focused on the discovery of the design and special potential of the "banal" of everyday objects. Using as precedents the still life compositions of Morandi, Jeanneret, Rossi, and the teaching strategies of Kandinsky at the Bauhaus, students had to compose a series of still lives, using objects of their domestic everyday experience. These have been drawn and analyzed, discovering their latent and hidden design potential. Students then *translated/transfigured//transformed* the objects into an architectural space, made of interior and exterior spaces, with connections, openings, paths, architectural events.

3. FOLDED SPACES AND PLANAR COMPOSITION

Using a "banal" sheet of paper, the final assignment was based on the planar composition of space, going beyond the idea of space as "enclosed room", and using the folded plane to generate form and space that is implied rather than enclosed, with continuities between elements that allows spaces to bleed into one another. Relying on precedents such as De Koming's, Umemoto's, and Munari's work and through intentional cutting and folding strategies, students were able to design a pavilion in an archaeological site.

# Igniting the Imagination: Speed, Slowness, and Simultaneity as a Pathto Creativity

J. David Matthews, Professor, University of Tennessee, Knoxville
Scott Poole, Dean Emeritus and Professor, Univeristy of Tennessee

Perhaps the most formidable challenge to teaching first-semester, first year design students is creating space for their imagination to flourish. What if the pressure of artificially constructed deadlines was minimized and time—big chunks of time—were provided for failure, iteration, and reflection? What if work in the design studio was focused less on a sequential series of final outcomes and more on a flow of work that overlapped, intertwined, and had indeterminate endings? What if the tempo of teaching was more attuned to the actual pace of learning? And what if the primary purpose of the studio was to unlock the beginner's latent imagination?

What would a studio like this look like?

Our purpose in this paper is to describe the tactics employed to realize our goal of activating vivid imaginative capacities inbeginning designers. Principal tactics included:

- fostering a gradual build-up of creative capacities,
- allocating sufficient time for discovery,
- and maximizing self-directed learning.

The rhythm of the studio alternated between fast and slow. Digital tools, for example, were introduced and put into action quickly, while the projects themselves had long durations and indeterminate endings allowing time for exploration, observation, and iteration.

Gradually, new projects were introduced coincident with existing projects allowing practice and improvement with an array of digital tools (rhino, photoshop, lightroom) as well as analog tools in the wood shop (band saw, chop saw, wire-cutter). The overlap between projects allowed students to continually return to the beginning—integrating new discoveries into prior work, building confidence through an increased mastery of tools, and developing a more sophisticated creative process.

The porous boundary between projects and their long duration supported the development of high-level design competence with minimum stress. As a result, students could work from inner necessity rather than external pressure, relieving them of the anxietythat so often interferes with the activation of a vivid imagination.

# Tools for Spatial Exploration: Possibility, Observation, and Discovery

David Matthews, University of Tennessee Knoxville

The objective of the presentation is to critically present a first year, first semester, learning experience to disrupt beginning students default position of “being right” and to engage design as an exploratory practice that synthesizes abstraction, discovery, and learning. The project is created to allow experiences that encourage a “posture toward the possible” through experimentation. A second underlying set of formal mini-exercises engages the student to explore color and the design of space. The student’s preconceived ideas for design solutions are redirected by a process that is initiated by the design and construction of drawing tools and concludes with the creation of proposals of occupiable space.

## Freehand Drawing – Linking Skills and Imagination

Tim McGinty, AIA, Bouler CO

Freehand drawing skills are valued in the profession but in short supply. While we are not uniquely responsible for solving the problem, we are worthy of addressing it both for the benefit of the profession and our students. The recommended response is teaching freehand drawing in four ways: 1) spread the response throughout the curriculum, 2) be minimalist in making recommendations, 3) emphasize drawings done at the very beginning of the design process, and 4) integrate mini-design questions into traditional beginning drawing exercises. Case studies illustrate strategies for connecting freehand drawing with designing.

# Exercising Scalar Shifts with Beginning Design Students

Margaret McManus, Savannah College of Art and Design

This paper looks at how we can engage first-year students (who have yet to declare a major) in varying disciplines of design within one foundation course while completing a cohesive project over ten weeks. How can we promote the multi-disciplinary avenues that can open to those educated in architectural design thinking?

Famed architect, Eliel Saarinen has stated: "Always design a thing by considering it in its next larger context - a chair in a room, a room in a house, a house in an environment, an environment in a city plan." The approach to this ten-week foundation project engages this quote by starting small and moving to the next largest context. Scalar shifts occur throughout the course that involve several disciplines while considering them as part of a larger whole. The transdisciplinary subjects include industrial design, furniture design, interior design, architecture, and urban contexts. This curriculum seeks to engage students of all early design majors; and while primary objectives relate to early drawing for the building arts, design thinking is introduced so that students are encouraged to move beyond observational exercises and are challenged to make unique design and aesthetic decisions.

The pedagogy of the course takes on the latent notion as put forth by the conference theme, as it keeps students in the mode of discovery by strategically sequencing and pacing the 10-week long project—leaving them in question as to what type of “envelope” or scalar context might come next. Additionally, the project encourages early hand drafting and a personal student connection that brings forth commitment and ownership even at very early stages of design education.

# The Experiences of Neurodiverse Students in Beginning Design Education

Jeremy Merrill, PhD, Ball State University

The term “neurodiversity” was coined by Judy Singer in the late 1990’s. This definition has come to include a wide variety of atypical behaviors, including Asperger’s Syndrome and all autism spectrum disorders (ASDs). Neurodivergent students think, interact, learn and behave in distinctive ways which can affect their problem-solving and communication skills.

The Center for Disease Control data from 2016 states that, one in 54 children aged 8 years have been identified with autism (Maenner et al., 2016). Instructors likely already have neurodivergent students in their classrooms of whom they are unaware (Shatuck et al., 2012). Some of these students may not even know themselves. Females particularly often remain undiagnosed and therefore would benefit from education practices responsive to their specific needs (Goldman, 2013).

The design community recognizes that neurodivergent students have a set of specific environmental needs that differ from the neurotypical population. This is evidenced by the growing body of literature on how to design (primarily children’s) educational environments for promoting success in neurodivergent students (McCallister, 2012). These needs necessarily remains true at the college level.

Literature in secondary education for neurodivergent students centers on success in general university courses (Littlefield, 2010; Lorain et al., 2009; Hughes, 2009). However, design education is altogether different. This evokes the question: What are the experiences of neurodivergent design students in Beginning Design programs? Research is lacking on how to specifically accommodate neurodivergent design students. As design educators we may not be blatantly ignoring the challenges facing neurodivergent students and the challenges design educators experience in cultivating neurodivergent students yet these problems remain.

This paper presents the findings from interviews with neurodivergent students in post-secondary design education. This presentation will also review current literature, outline relevant challenges, and give an analysis of some typical characteristics of neurodivergent students that may prove beneficial in adapting design education.

# La Máquina: Operational Matrix for an Inclusive Architecture

Felipe Mesa, Arizona State University
Elena Rocchi, Arizona State University
Catherine Spellman, Arizona State University

The ASU architecture program recently established an inclusive undergraduate education with impactful outcomes. This paper explains the design of an architectural pedagogy for a non-professional BSD in Architectural Studies degree available to all undergraduate students with a 3.0 GPA. It teaches architecture as a collaborative process and way of thinking through making, offering education to instigate a desire for the discipline to be impactful. The paper advocates for an architectural pedagogy in favor of radical inclusion, and collaboration. Here we illustrate the first examples of the new program studio coursework and structure, allowing us to remove the milestone capacity of 45 and teach to an entering class of 330. To accommodate this growth, build an expandable program and, offer students maximum flexibility in completing the required credit hours, the authors of this paper developed a program structure called *La Machina,* an operational matrix that ensures students have equal access to learning outcomes and build common skills across individual topics. This new educational model is about tangible and intangible qualities in design, and encourages self-discovery in beginning design education. The matrix unites studio coursework across three years of the curriculum and makes it possible for students to matriculate directly into the professional graduate program. *La Machina* creates a syllabus, a Canvas course management system, and an assignment structure. With this matrix, individual faculty develop independent topical studios for large numbers of students working collaboratively. The matrix constraints ensure the "blatant" as common skills and learning outcomes for students and the "latent" as the very different forthcoming educational experiences developed by faculty and delivered to an ever more inclusive body of students as the program continues to grow.

# Title: Pedagogical Ambiguity and Ambiguity of Pedagogy: Pattern Pedagogy as Sense-Making in Design Foundations

Noor Danielle Murteza, The Ohio State University
Madison Sabatelli, The Ohio State University

Create that which does not yet exist; that is the overwhelming position prescribed to foundation design students. Young minds new to the problems of design are often at a loss. Their instructors rarely give axiomatic truths but seem to expect a certain type of work to be produced. New students experience a first year that is likened to fraternal hazing, where instructions are sparse, and expectations are rigid. A set of unspoken rules lurk around the corner. After all, "uncertainty lies at the core of art and design teaching and learning" (Orr and Shreeve, 2018, p.57). Teachers of these new students are caught in their own quagmire. If their instruction is overly specific, procedural, and ideological, they might stifle the students' self-directed explorations. And if their instruction is loose, students might get lost along the way, feeling as though they have been dropped in the ocean without a lifeboat.

This paper hopes to bring together disparate concepts to suggest a Pattern Pedagogy by providing further guidance to students and instructors by 1) defining pattern in relation to pedagogy and curriculum 2) exploring cross-disciplinary case studies of pattern 3) concluding on identifiable teacher and student patterns of behavior that contribute to or result from problems of ambiguity in pedagogy. Building on these behavior patterns, we hope for future research to present pedagogical patterns that offer solutions to ambiguous pedagogy in the creative classroom or studio these problems.

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# Architectural Collage: Making everyday built environments more hospitable with hospitality design

Glenn NP Nowak, University of Nevada, Las Vegas

A first and only design course many college students will ever take provides a unique opportunity to examine the potential for beginning design students to interrogate architectural assumptions and grapple with complex abstractions. In a classroom filled with non-design majors from such diverse disciplines as biology, education, and political science, the students were seen as professional users of space and lay-designers. Each student entered with life experiences and emerging expertise that informed their understanding and assessment of the built environments they inhabit on a daily basis. With merely a couple weeks of analyzing mundane built spaces and brainstorming how to affect change, beginning design students may not have the technical competencies to actualize their architectural dreams, but through collage they were equipped with the capacity to glue the familiar and the fantastical.

Students were able to connect lessons learned from hospitality design to non-hospitality environments. More hospitable versions of neighborhood spaces become more accessible versions of the original. The integration of a hospitality mindset in sustainable housing brought ideas of affordability and even agriculture into the design conversation. Key characteristics of desirable tourist destinations were synthesized into an alternative to suburban sprawl. More hedonic-focused elements made otherwise utilitarian programs more efficient through heightened levels of engagement. With each iteration of collages, the perception of hospitality design shifted further from a force of consumption toward a fuel for creation. Understanding the contributions non-designers can make to the conception of the built environment is among the most exciting outcomes of this endeavor. Continuing this line of inquiry with emerging design students hopefully leads to space for interdisciplinary visioning of how to combine hospitality design thinking in less-hospitable places.

# Archi*Tone*ics: Explorations of Music in the Architectural Design Studio

Deborah Oakley, University of Nevada, Las Vegas

Since at least the time of Vitruvius, there is a long history of reflection and some practice concerning the connection between architecture and music. Attributed the German polymath Johann Wolfgang von Goethe, the phrase *"Architecture is frozen music"* has been so oft repeated as to become a cliché. It has also been said (of less certain attribution) that *"Music is liquid architecture,"* further intimating an inherent connection at a deep level. We know architecture as the world of built form, consisting of hard materiality assembled in an ordered manner. Music, essentially, is sound assembled in an ordered manner, and therein lies a fundamental connection forming the basis for this pedagogic study.

Beginning with a brief background of the relationship of music and architecture in the work of historical and contemporary figures, this paper presents an approach to the incorporation of music into an architectural studio environment as a formative exercise. The structures within music are well established, however the deep complexity of music theory that has evolved over the centuries can form an unnecessary impediment for the beginning student. To best facilitate an understanding of music theory that is highly approachable by individuals with little or no musical training, an alternative perspective is presented that focusses on the seven basic tones of the major scale and their sonic relationships. A significant amount of music can be described from this perspective, thus providing a simple and approachable but powerful conceptual model.

In the exercises, graphical forms derived from sound are employed as a tool to generate visualizations inspired by contemporary or classical music. Results of student work represent a first iteration of these explorations, and possibilities for expanding the approach in future offerings are discussed.

# Cross Application Workflows: The Integration of GIFs in Design Education

Michelle Pannone, Marywood University

The incremental design process is critical for students to communicate design intent early in their education. Considering the need to reset expectations in the development of an individual design process, it is necessary to acknowledge that beginning design students have limited exposure to architectural design tools upon setting foot on campus. However, from their lived experiences growing up in a technological revolution, students bring an abundance of latent understanding addressing experiential and spatial environments. They are accustomed to storytelling and have an already established understanding of virtually created space. Although the students have designed content before, this resetting of expectations and focus on space making is critical for the student to be able to consciously and deliberately develop their design sensibility and communicate intent; the act of critical making versus content creation. How can our teaching methodologies better align with today's students and build upon this foundational knowledge by leveraging the familiarity and passion students have for digital tools and platforms?

To build upon their established digital familiarity and integrate space making into their technology repertoire, the creation of GIFs, a familiar digital content format for the student, were used as a representation methodology in the first-year studio. At the core, GIFs communicate complex design ideas in a way that is articulate and dissectible; students must work through a series of design decisions that incrementally contribute to the final visual product. In teaching Digital Media, there is often a disparity between student ability to represent both technical and atmosphere qualities in t wo dimensions. In contrast, the familiarity, confidence, and certainty in the format of a GIF enabled all students to communicate their design intent with clarity. As technology has become ubiquitous in the shared commonalities with spatial and experiential environments, it is essential to explore diverse representation methodologies in both the process and the documentation of design ideas.

# Accounting for Taste: Students and Landscape Architecture

Justin Parscher, The Ohio State University

The typical course of instruction for the beginning design student sets out to rewrite the student's superficial understanding of the field, and in so doing reconfigure the student's notion of taste. Instructors work to defamiliarize the aims of design, guiding students through an unfamiliar method to produce work that is often contrary or unreadable to their given tastes. In the process of encouraging beginning students to modify their tastes, however, the instructor also has a rare opportunity to closely examine taste as a cultural phenomenon. Where exactly does that out-group understanding of the subject diverge from that of the in-group of designers? Where are the aporias, places where for either group that taste is undecided or self-contradictory?

An introductory lecture course on landscape architecture has proven to be a venue for better understanding the lay understanding of landscapes and their making. As part of this course, students share and compare the received ideas of taste they bring into the class experience. This is done through mostly through a series of rankings, that asks students to evaluate landscape views, designs, and philosophies against one another. Students are also asked to draw common landscape types and reflect on what experiences shaped their notion of the proper form of these types. The results become a platform for beginning to see the field of taste that determines which landscapes are valued by whom, and where landscape valuations lead to conflict.

# Firsthand Encounters & Ephemeral Conditions

Keith Peiffer, Oklahoma State University
Jerry Stivers, Oklahoma State University

This paper discusses a third-year undergraduate studio project at Oklahoma State University in which architecture students engaged the blatant and latent through a close reading of a familiar building. The project makes a case for using what is immediately around us as a pedagogical method, allowing students to begin with something (they think) they already know. The project, titled "Firsthand Encounters & Ephemeral Conditions," explored how space is experienced directly through engaging a building on campus. Students focused on subjective qualities like individual point of view, firsthand encounters, serendipitous moments, and ephemeral conditions in analyzing their chosen site. They then considered how these intangible qualities found material expression through three distinct phases: Identify, Collect, and Intervene.

This project engaged both the broader curricular framing of the studio and this conference's theme in considering the tensions between blatant and latent conditions, articulated as several different oppositional pairs: science vs. art, performance vs. experience, measurable vs. intangible, quantitative vs. qualitative, etc. Our teaching approach for delivering the project challenged students' latent assumptions through encouraging "rule breaking" with respect to the presentation format, modes of representation, the design process itself, and subjectivity. The resulting collection of student work presents a body of design research suggesting some ways to create a taxonomy for the latent, with six categories defining the interplay between the building, its occupants, and the environment around it. In addition to helping to identify these categories, the projects also suggest specific representational techniques effective for visualizing architecture's latent conditions.

# Imaging Models / Modeling Images

Zachary Tate Porter, University of Nebraska-Lincoln

For better or worse, the digital model is increasingly becoming the primary site and apparatus for architectural design. While orthographic and axonometric views continue to proliferate within architectural schools and beyond, these artifacts are rarely constructed as drawings. Instead, they are more often *images* of a digital model, output as Make2D linework or rendered clipping plane sections. Yet, this shift from drawing to modeling does not necessarily imply an abandonment of the discipline's representational expertise. In fact, many of the conceptual frameworks and themes that were initially developed through the discourse on drawing can be extended to the emerging workflows of contemporary practice. This paper outlines specific strategies for digital modeling and image production that leverage the potential of these new workflows while building upon the discipline's established discourses on representation. In particular, the paper considers the critical potential of the emerging model-image paradigm through four distinct concepts: *scenography*, *materiality*, *abstraction*, and *scale*. Each of these concepts is discussed on a technical and conceptual basis and illustrated through examples of student work from beginning design studios.

# Notan to Color: Abstraction through Discovery

Sarah A. Ra, Oklahoma State University

Discovery is a key element in the beginning design process, and mimics the way that we learn about the world as children, using touch before sight. In her description of “Notan and the Innocent Eye”, Dorr Bothwell notes that, “The search for Notan should force us into a more creative observation of our surroundings and revive in us a sense of the wonder of life.” While we introduce design principles and elements to students, the uncovering of these principles through the analysis of existing works, as well as the discovery of them in process sketches, is crucial to creating design fluency. Through a beginning design project that brought these two methods of discovery together with an exercise in abstraction, students created layered compositions and explored the latent possibilities encompassed in the prints.

*Notan* derives from the Japanese concept of harmony between light and dark, and between positive and negative space. This interaction of light and dark served as the basis for our exploration of basic design principles related to composition. Students selected one or more Japanese woodblock prints and analyzed the design principles and elements at play, discovering compositional techniques, positive and negative shapes, and the use of line. In the process, they began to visualize and trace a range of shapes present in the image. Through subsequent iterations, students abstracted the image or parts to their essential qualities, employing overlays, and discovering spaces created in the new compositions. This multi-layered process of analysis, discovery, abstraction, and interpretation, led to a rich variety of schemes, but more importantly, the development of a tactile design process fluency for our students.

# Emblems of Colonialism: A Research Methodology to Investigate Hidden Stories of Designed Objects Within the Built Environment

Sara D. Reed, PhD, Virginia Commonwealth University
Emily Smith, NCIDQ, LEED AP, Virginia Commonwealth University

Object-based visual analysis offers design students the opportunity to discover the blatant design elements at play including form, line, texture, color, etc. This analytical exercise aids design students in evaluating their own employment of these fundamental design tools. However, it is often through contextual object analysis that students explore 'hidden or forthcoming' meanings and values thereby challenging their contemporary relationship with designed objects and spaces. This is the lens through which a design historian and interior design studio faculty member have developed a project for beginning design students focused on object analysis.

What are patterns of colonialism within the built interior?

Do patterns and motifs reflect a sense of place and for whom?

What type of insight does the study of patterns and emblems on objects provide?

The basis for this assignment is rooted in Material Culture Studies, which uses the object as the foundation for a deeper analysis of cultural values during a specific time and place. In Jules Prown's seminal text, he describes it thus: "The underlying premise is that objects made or modified by man reflect, consciously or unconsciously, directly or indirectly, the beliefs of individuals, who made, commissioned, purchased or used them and by extension the beliefs of the larger society to which they belonged" (Prown, 1982). This approach is particularly useful to design students, who have to simultaneously consider the formal and sensory aspects of objects and spaces (blatant) while also acknowledging the conscious and unconscious (latent) associations of the user experience.

# Design and The Poetics of Everyday Life: Exploring the Tangible and Intangible Dimensions of Vernacular Architecture and its Landscape

John M. Reynolds, Miami University Department of Architecture and Interior Design

Bernard Rudofsky's 1964 MOMA exhibition *Architecture Without Architects* launched global interest in the area of vernacular or what Rudofsky would call "non-pedigreed" architecture. He found it essential to explore anonymous, spontaneous, and indigenous architecture noting that previous architectural historical narratives focused on institutional and privileged architecture. Parallel to Rudofsky, Pietro Belluschi also argued that vernacular buildings were a form of what can be imagined as an intangible 'communal art', a collective enterprise that demonstrated amenable relationship and engagement with the tangible or blatant physical dimensions of their surroundings such as climate, materiality, tectonics, topography, and the specificity of context.

This paper explores the everyday tangible (or blatant) and intangible (or latent) dimensions of vernacular architecture and its landscape while providing the beginning design student strategies for interpreting and deploying vernacular-inspired design ideas and tactics. The goal of this study is offer students a lens into the pragmatic and poetic of vernacular architecture through the tangible and intangible decoding and design of architectural settings informed by vernacular building practices. Students in the Modern Vernacular Design Studio considered 'site' through its known tangible 'physical' dimensions such as climate, topography, materiality, technology, and type that inform the site's terrestrial content and identity as well as each site's ethereal, intangible 'metaphysical' dimensions such as relation to the earth, temporality, culture, historical gesture, and spirituality. The objective of this goal is to advance Modern Vernacular Design that, while aware of the forces shaping contemporary global architectural culture, is attuned to local sensibilities, tangible and intangible, that contribute to a more sustainable and humane architectural ethos while enhancing human well-being.

# Archetypal Design Constructs in Early Design Studios: How to Explore and Expose Beginning Design Students to the Unseen in Architecture

Arsenio Rodrigues, Bowling Green State University
William Batson, Prairie View A&M University

Design projects introduced in the beginning design studios often tend to be controlled by formal modalities of composition – *form, space, order*. Likewise, the generation of physical forms in the beginning design studios appear to be associated with varying levels of creativity, innovation, context, and craft-composition. Such design-informing parameters introduced in the studio environment remain fragmented and may be unclear to beginning design students. Further, random 'ideas' or 'concepts' incorporated by beginning design students typically remain 'un-founded' and 'un-resolved' in relation to the idea of *place-making*. Such (random) design-informing concepts have little to do with a deeper phenomenological understanding of timeless design values in architecture.

Consequently, one could posit the question - *What meaning does the term 'Concept' bare to students in the early stages of their architectural education?* Are concepts, in fact essential to the design process for beginning design students - do blatant-latent 'conceptual underpinnings' have the potential to inform the design process and product, and if so, to what extent. Within this context, how may creativity be addressed in design studios, such that the formal rules of composition remain based, not on pre-conceived random concepts, but rather grounded in a deeper and more thorough phenomenological understanding of place – where beginning design students are exposed and engaged in the thinking and making of architecture that is 'extraordinary' and outside the realm of the mundane?

This paper addresses these and other issues related with a deeper understanding of the 'making of place' in early design studios. An investigation of fundamental place-making principles at the blatant and latent levels are explored by beginning design students and a qualitative analysis of the "Unseen in Architecture" as design constructs in the design process are explored and presented as outcomes.

# Rituals of Place: Measure and Meaning in Ephemeral Landscapes

Carley Rynar, University of Florida
Bradley Walters, University of Florida
Nina Hofer, University of Florida

When we engage the physical world outside the studio, site and landscape become more than passive tableaus or inert media within which we operate. The lands within which we work are, in fact, complex and nuanced fields marked by overlapping and competing systems. When we consider the human condition within these natural systems, there are a number of new issues that arise. Culture, history, belief, social structures, psychology, reason, passion, and memory enter.

Each singular human encounter with a place is unique, since both the physical environments and the people that engage them are continually evolving and changing. It is imperative to consider both the human condition and the landscapes that we occupy, embracing intersections that initiate conversation, and reading both to uncover aspects about them that may not be readily legible.

Discrete sensory perceptions co-mingle with personal memories, gradually replacing direct perception and precise singularities with broader generalities and/or preconceived notions. The shared natural landscape yields to the personal, constructed landscapes of distracted bodies in motion around one another. Our individual experiences are tempered and framed by our own lived experience, prohibiting us from seeing and experiencing through an unbiased lens.

For the beginning design student, it is hard to understand the complexities of place, especially place as shaped by our human condition. This paper proposes a ritual process of regular field visits, rigorous data collection, and reflection that allows one to draw out the tangible and intangible facets of place. It is the ritual, implemented over an extended period of time, that allows for a gradual slowing down, giving one an opportunity to be more acutely aware of changes in the physical environment. It also provides an opportunity to reflect on the phenomenal, physiological, and psychological aspects of site, and our individual body's role in the shaping of space.

# Playing with pieces: assembling knowledge

Arief Setiawan, Kennesaw State University

We are interested in play as a means to teach design foundation in our architecture freshmen studios. Inspired by lego toys, we are drawn to the use of kits-of-parts. In this vein, we saw kits-of-parts as analogous to the ubiquity of standardized elements in the designs and constructions of built-environments. For the project, we provided students with a fixed number of wood tiles and also dowels and splines to connect these wood tiles. Through a series of iterations, the project tasked each student to produce a panel within a specific dimension. Essential in this step was students playing with multitudes of possibilities to arrange the tiles before assembling their panels. Next, the project asked students to connect their panels together to create a wall. The play shifted in scale and complexity and added a new dimension, that is, negotiating with each other in order to assemble the wall. In the last sequence of exercises, all first-year students assembled the section walls to form a First-Year wall. This project explored individual and collective plays, assembly as a design problem, and constraints in design processes. It evolved on the premise of encouraging students to play with their kits-of-parts in arranging and assembling individual panels and the collective wall. This implied chances and trial-and-errors. However, a fundamental part of a design process is the presence of design intents; an aptitude in design thinking that we intend to develop in beginning students. What are the avenues to introduce the notion of intentionality out of these plays? How to transform students' findings in their plays and explorations into a design methodology?

# Critting the Crit: A Pragmatic Approach

Matthew Shea, University of Colorado Denver

The *Crit,* or jury, is the practice that most characterizes architectural education in North America and has remained primarily unchanged for the past century and a half despite attempts to alter and reform its structure and processes over the past 30 years. Arguably, one can conclude that the *Crit* is unquestionably assumed to have an inherent educational role or benefit in the teaching of architectural design due to its broad and frequent use and its ever-recognizable format. As a result, we often engage uncritically in its practice. However, as it exists, is the *Crit* the most effective, fair, and educational means to deliver feedback on and evaluation of a student's project? How can it be improved? To answer these questions, this paper proposes a framework for evaluating and reconfiguring the *Crit* from the perspective of the *educative experience* as laid out by John Dewey in *Experience and Education.* For Dewey, the *educative experience* has two primary outcomes: learning from experience and cultivating continued learning. Both of these outcomes can be achieved or enhanced by the practice of the Crit. The proposed framework uses the foundational principles of the *educative experience* (continuity, interaction, and socialization) to evaluate the ubiquitous conventions of the *Crit*. The intent is not to illuminate the *Crit's* shortcomings as an *un-educative experience* but rather propose a framework that enhances and increases its potential as a unique *educative experience in the* students' educational process. As a developmental tool, this framework will address components of the *Crit* such as spatial configuration, review panel composition, and review schedule. Through the development and use of this framework, design and, most importantly, beginning design instructors will be able to curate a more responsive, educative, fair, just, and inclusive *Crit* for all.

# Teaching Architecture's Epistemology or: How Students Know What They Know

Benjamin J. Smith, Ph.D., Tulane University

In an architect's training, students confront diverging perspectives on established themes: architecture as an art, as a technical science, and as a social enterprise. This paper proposes architecture as a field of investigation that leads to the production of knowledge within broad contexts by common means. Three questions drive this proposition: (1) If the above statement about themes asserts art, science, and society as blatant subjects of architecture, what latent commonalities exist that unify the discipline? (2) What are the methods of architecture that architects and architecture students use to substantiate their ideas and claims? (3) How can a class situate the precision of depth on subjects while advancing a field characterized by breadth? These questions permeate the design of a syllabus for a new undergraduate architectural research methods class that precedes a year-long design thesis sequence in a professional degree track. Rather than teaching the class from a survey textbook, an alternative approach adopted for this class uses the formats of production in architecture to illustrate the communication of knowledge inherent to the discipline. The first two weeks of the course introduce the objectives of research in academic and professional contexts to situate epistemological perspectives for architecture. The course divides the remaining twelve weeks of the semester into three, four-week units: Visual Research, Written Research, and Presenting Research. The semester concludes by revisiting the first assignment that asks the students to write a short statement defining research in architecture. As architecture students advance in their professional education, they gain competency with an arsenal of tools. To leverage those tools, the objectives of this class are twofold: to expose students to the underlying values within the formats of architectural production, and to aid students' abilities at substantiating positions about architecture through the formats of production in which architects are trained.

# Interstitial Latency in Design-Build Architecture Education

Ming Tang, University of Cincinnati,
Whitney Hamaker, University of Cincinnati
Yingdong Hu, Beijing Jiaotong University

This paper presents two design-build projects that encapsulate a two-phase process broadly outlined as "design and build." The collected work spanned multiple seminars and studio courses at the University of Cincinnati, Beijing Jiaotong University, and Nanchang University.

First, we describe the design stage, where the conceptual models were generated with the local context, community issues, and proposed architectural interventions. The concepts are represented through digital models. These designs were later developed into physical mockup models without a reference to the craftsmanship required of the onsite build process.

In the build stage, students participated in the manifestation of the immaterial through onsite construction, experiencing first-hand the transformative potential of a series of diverse activity-based programmatic structures in a rural community. This phase emphasized the construction and exploration of craftsmanship with local resources and materials, producing an outcome that stimulated new activities in the village. By immersing students in the complete design-build cycle, the projects demonstrated the power and possibility of interstitial spaces between phases in the design process.

Students were empowered to consider the various responsibilities architects, engineers, and builders provided in practice. This pedagogical method actively questions where the latent effects of translation between immaterial and material can be learned from both architects and builders. Simultaneously, the projects engaged in a large-scale rural revitalization effort, providing an alternative paradigm for redevelopment. A downstream effect of the teaching methods contributes to the discourse surrounding revitalization and growth in rural communities by exploring a path to instigate positive change through a synthesis relationship of architects and builders.

# The Necessity of Troublesome Encounters When Learning to Design

Stephen Temple; Department of Architecture; University of Texas San Antonio

Beginning design students frequently encounter issues difficult for them to understand and onerous to act on. From a confused comprehension, they rely on past experiences and preconceptions, leading to frivolous or rote responses, or 'faking it till they make it.' These postures toward initial studio work are due to students attempting to operate in pedagogical structure outside or beyond their developmental level as a learner, or those that seek only to foster disciplinary knowledge or act as 'skills courses' with limited intent toward student development.

Moments that beginning students find troublesome are defined as 'thresholds concepts.' These are learning experiences that have a propensity to be transformative of both the processes of learning and of the student him/herself. Experiencing a threshold concept tends to be irreversible in that once it has been understood, becoming impossible to return to the previous worldview, and will fundamentally alter the way a discipline is viewed by lending comprehension to the whole of a discipline. Threshold concepts are not necessarily skill acquisition or core disciplinary concepts, but those that transform the life-experience of the student such that the knowledge structure of the subject becomes part of the 'being' of the person. Recognizing the occurrence of threshold concepts in beginning design pedagogy appropriately realizes that contending with threshold concepts is necessary to processes of design learning as these encounters facilitate the transformative learning necessary to realizing one's path to becoming a designer.

Thresholds concepts in design learning are encounters with issues like uncertainty, abstraction, systems thinking, criticism, iterative thinking, and encounters with concepts like narrative, ideas, and letting go of personal feelings. These threshold concepts will be further defined within beginning design followed by discussion elaborating how enabling threshold concepts in design experiences constructs pedagogies that better facilitate student self-development.

# Representing Movement: Hidden Trajectories of Obvious Pieces

Berrin Terim, Clemson University

"Any architectural drawing is not just an aggregate of arbitrary signs that stands for something else – two lines make a wall, dash lines indicate something hidden, and so on – but they bring together signs that derive their meanings from the embodying of their tracing into the events that they represent."

It is important remember these words of Marco Frascari in beginning design studio, where design pedagogy is both embedded in and unfolded through teaching the means of communicating design -mainly drawing. First year students can easily identify a plan as *the* quintessential architectural drawing, and can offer a valid reading in terms of its spatial organization along with noticing simple notations, to be translated as architectural elements; such as doors. However, they do not yet exercise the level of sophistication to interpret the given notations beyond their symbolic gestures. They do not yet register that those individual pieces of the notation can well be interpreted as a design element in order to be employed for a spatial gesture rather than a conventional door figure.

In order to teach them design as a process unfolded in the act of drawing, rather than assemblage of various signs per se, we engaged our students in designing spaces through movement. Starting with an analysis of a hand-held object that has moving parts, students explored how to represent movement, understanding space as an entity occupied temporally. Later, they designed a wall with moving parts, realizing various spatial configurations that can emerge from simple movements. Accordingly, through analyzing movement as a spatial study, students could critically approach drawing as a design medium, as well as design as a combination of unexpected / latent conditions embedded within predetermined / blatant elements.

# Translating latent cultural capital of beginning design students into unique creative voices.

Saskia van Kampen, San Francisco State University

Bourdieu's theories on "cultural capital"[1] explain how individuals gain social assets through upbringing. Many students attending State Universities have had little to no formal exposure to the Modernist design canon and little to no training in art or design in their high school education. However, they do have incredible life-experiences and personal histories that they bring to the classroom. Designer Anoushka Khandwala explains "the authority of the canon has undermined the work produced by non-Western cultures."[2] By leveraging the diverse cultural capital of students, Modernist design precedents can be questioned in unique ways. Corrrective Collective's Design Manifesto suggests that design education must encourage students to review (past norms), react (in a creative way), and reform (adjust by giving an alternative).[3] This can be done through harnessing the diverse knowledge-base of the students in the classroom. One of the challenges to students looking inward for inspiration is their reliance on social media as their primary source for creative insight. Brunfaut & Daly (Base International Design Studios) state how individuals use platforms such as Pinterest and Instagram as their entire research process "…rather than using it as a tool to supplement 'on-the-ground' research."[4] In response to these issues, this author explores ways to help students look inward in order to bring students' unique cultural capital into their designed works and encourage a more active investigation and development of their unique creative voices.

[1] Bourdieu, P. Distinction: A social Critique of the Judgement of Taste. Cambridge, Mass, USA: Harvard University Press, 1984.
[2] Khandwala, Anoushka. "What Does It Mean to Decolonize Design?" AIGA Eye On Design, (2019, June 05). Online. Available at: https://eyeondesign.aiga.org/what-does-it-mean-to-decolonize-design/ (Accessed 25 September 2020).
[3] Corrrective. "Manifesto," Corrective Collective, n.d. Online. Available at: https://corrrective.com (Accessed Sept 20 2020).
[4] Brunfaut, Thierry & Daly, Emily, "The Pinterest Effect," Base, 2019 (Accessed Oct 7, 2021) https://www.basedesign.com/blog/the-pinterest-effect.

# Conversational Design, A Methodology for Education in the Expanding Field of Design: A Case Study in Biological Design

Devon Ward, Ball State University
Kirill de Lancastre Jedenov, The University of Western Australia

"*Louis Kahn used to tell his students: if you are ever stuck for inspiration, ask your materials for advice. "You say to a brick, 'What do you want, brick?' And brick says to you, 'I like an arch.' And you say to brick, 'Look, I want one, too, but arches are expensive and I can use a concrete lintel.' And then you say: 'What do you think of that, brick?' Brick says: 'I like an arch.'"* (Wainwright, 2019)

This anecdote about Louis Khan can sometimes be considered an odd-ball quirk of an architect who "speaks" with his materials.[2] However, if the back-and-forth exchange between Kahn and a brick is further articulated, it offers a model for a specific design process — the Conversational Design approach — which can be used by creative practitioners in a broad range of art, design, and creative fields. The procedural call-and-response model of the Conversational Design approach can be understood as the blatant aspect of design, while the designer's intuitive reaction to their material's agency — what Donald Schön referred to as *reflection-in*-action — is latent quality of the design process. The fluid and expansive nature of this design process may particularly benefit fields of design and design education that are still emerging and which have not yet been codified into concrete pedagogical forms.

The aims of this paper are twofold. First, it introduces and outlines a method for engaging in the Conversational Design approach. Second, it acts as a case study for how the Conversational Design approach can be used to teach emerging fields of design such as biodesign, a relatively nascent field that combines biology and design.

# Non-Square Grids: Voronoi Explorations in 1st Year Design

Ross Wienert, University of Houston Gerald D. Hines College of Architecture and Design

John Hejduk's Nine Square Grid Problem (9SG), serves as a pedagogical tool that continues to inform architectural education, providing constraints that allow students to focus attention on fundamental design elements. While these constraints offer benefits, current digital tools allow beginning design students to explore an expanded range of strategies that extend beyond the orthogonal. The Non-Square Grid project offers an alternative methodology that embraces the same fundamental lessons as Hejduk's 9SG, while allowing for more diverse and dynamic design solutions.

When working with complex compositions in a first-year design studio, it is critical to provide students with guidelines that help maintain a sense of order. The Voronoi system for defining space provides an alternative to the grid that is prevalent in many introductory design exercises. This system is explicit in its rules and blatant in the sense that for any given set of points there is one specific collection of cells. When constructed correctly, each cell demarcates the space closest to the point within.

While the Voronoi is blatant in its exactitude, this process is also latent with the potential for a wide variety of possible outcomes. Students discover that the placement of the points determines the eventual outcome of each composition. The range of possible spatial and formal possibilities within the system are broad, with the orthogonal grid included among them. Rather than being exclusive and restrictive, the Voronoi as a system is fundamentally diverse and inclusive.

Where Hejduk's 9SG assumes the presence of nine rectangles as the starting point, the Non-Square Grid removes the assumption of these implied cells and asks students to plot nine points as the first step for each composition, allowing for the possibility of more complex geometry. Each student initially creates a series of iterations where the relationships of the points are aligned, radial, and free form to help them understand the relationship between the placement of the points and the pattern of cells that result. While the initial exercise provides a sense of how the system works, the results emerge slowly as students construct the cells by plotting points, drafting connectors and bisectors, and defining the space within each cell in both two-dimensional drawings and eventually three-dimensional models.

This approach to first year design aims to strike a balance between asking students to follow a rigorous constrained methodology and allowing them to discover diverse spatial and formal solutions on their own. The Voronoi system provides an established process that helps guide the students, while also allowing for a broad range of possible outcomes. The paper asks questions about the degree of constraints that are appropriate in first year design and where the possibility of authorship and individuality are allowed to emerge. While the constraints are more liberal than those of Hejduk's 9SG, they are still present, and the loosening of those limitations may open the door to a more diverse spectrum of possibilities that are appropriate for today's design students.

# Learning Design Through Designerly Knotting

Jonathan Williams, North Carolina State University, Iona College

This paper explores the integration points of “designerly knotting” within K-12 beginning design education in synchronous, virtual learning environments. The paper proposes two instructional workshop plans that are intended to introduce K-12 learners to the discipline of design through designerly knotting. The first workshop plan, designed to be delivered in a six hour, day-long workshop, allows learners to develop custom knots through narrative building techniques. The second workshop plan, designed to be delivered in weekly 30 minute sessions, focuses on the tying and analysis of a specific designerly knot during each session. Each plan teaches knot tying techniques to develop the knot tying skills of the learner, while allowing for critical reflection about the designerly knots that result from the exercises and open-ended explorations.

From sailors and surgeons to casual users tying their shoes or preparing a fishing rod, many have succeeded in the intricate dance of skill and coordination needed to tie a knot. Knot tying is a childhood rite of passage, which functions as a familiar and approachable entry-point for K-12 learners to enter the design discipline. When positioned within the design domain, designers can distinguish their own distinct form of knot tying — designerly knotting — that is different from other professional or common applications of knot tying. Designerly knots are knots that emphasize construction and physical soundness, functional use and appropriateness of use, and the qualities of aesthetics and beauty in the knot’s existence. When designerly knots are placed into a learning environment, designerly knots function as constructionist learning objects within beginning design education practice. Providing tangible learning and tactile instruction, designerly knots teach pattern recognition and computational thinking, build haptic vocabularies, all while providing room for improvisation by the learner as they explore what it means to create in the context of design.

# Ghosts of Borges: The Evolving Role of Scale in Architectural Imagination, Representation, and Building

Robert Williams, University of Massachusetts Amherst

The idea of scale within architectural education, practice, and discourse is at once both mundane and profound. Mundane because at a technical level the scale drawing is the basic, elementary currency of architectural representation and communication. Profound because scale provide an essential conceptual framework grounding the relationship between architect, architectural representation, and architectural objects. This paper begins to examine the impact of the shift to digital representation technologies on architects' understanding of scale and its role in structuring the relationship between architectural imagination, representation, and building. In particular, I draw a distinction between two understandings of graphic scale – one physical and one conceptual – and argue that essentially scale-less digital representation tools subvert both understandings and alter the traditional relationship between architect, drawing, and building. If true, then the interesting question becomes how to revise those conceptual frameworks provided by scale or introduce novel ones better suited to contemporary representation and building.

# Studio Improv

Professor Will S. Wittig, AIA, University of Detroit Mercy

Where to begin? A perennial question for a beginning design instructor. This paper explores one method of approaching the first step - a strategy that intends to lay the foundation for the design process, while undermining students' desire to move quickly toward easy formal 'solutions.' Students are assigned an abstract expressionist painting, and a process unfolds that is designed to subvert the desire to anticipate what a 'good' outcome for each small step should look like. Students create a set of drawings in response to the painting by adhering to the structure of the original. Borrowing from the melodic form of musical improvisation, 'improv' is introduced, and a second set of drawings begins to take on a life of its own, exposing deeper structures of the painting while also creating new variations from a prompt that lacks explicit meaning. This process then shifts to 'improv' study models, culminating in a three-dimensional object that is drawn in orthographic projection. One undercurrent of the process is establishing the importance of iteration; generating multiple options to create unexpected opportunities that are discovered through the process itself. The absence of an easily defined outcome fosters an open-ended approach so a direction can emerge from the latent attributes of the work itself, rather than chasing an a piori formal goal. As a complement to the iteration subtext, the concept of intent is also introduced, first by asking for adjectives that can be used to identify soft goals for each improv, moving towards a more articulate description of intent. In an analogous way, very little is at stake with respect to value judgements attached to the chosen intent, so the desire to attain a predictable outcome is destabilized while simultaneously establishing the premise that intent is necessary to animate the raw process of iteration.

# Is learning “to make” enough?
# The latent value hidden in design-build in early design education

Bruce Wrightsman, McEwen School of Architecture at Laurentian University

The day-to-day practice of architecture must navigate within a system of contexts often replete with competing values. Conflicting demands, personality quirks, mercurial collaborators, weather patterns, and budgets affected by shifting client wants and needs all add unknown and often unstable variables to the equation, further complicating the contingent nature of the discipline. The architect must be devoted to navigating multiple, often intersecting contingencies that define the process. This contingent nature of practice is notoriously difficult to model in an academic curriculum and equally difficult to evaluate, tending to favor discrete topics that result in ‘blatant’ measurable knowledge.

One intent of academic design-build projects is to address many of these conflicts. With typical design-build projects, students face a steep learning curve by confronting limitations that are rarely, if ever, addressed in a typical academic design studio. This offers a vitally important component to the fragmented nature of traditional architectural education, in which drawing and construction are typically seen as separate acts (Hughes, 2014).

A review of the current published literature on design-build education reveals abundant images of students in the act of physical construction. It also reveals a clear alignment between the binary terminology and the focus on the novelty of the physical, full-scale ‘build’. However, as typically practiced, the academic design-build process alignment privileges the ‘blatant’ tangible lessons of gravity, assembly, and craft over many of the ‘latent’ intangible realities that influence architectural practice for the participating students.

*Is it sufficient that students learn how to build something, or to at least believe they did?*

This paper will argue that the same bias that focuses on the initial act of construction and the resulting end project obscures critical evaluation of the outcomes at the learning expense of design students, particularly in their beginning years, when engaging these ‘latent’ realities should begin. When we pull back the curtain and look more closely at the design-build academic process, we can see a number of challenges beyond the build that represent missed learning opportunities related to a holistic notion of architectural education and the complete undergraduate design experience.

These design/build opportunities most commonly occur later in an Architectural curriculum. This paper will present an alternative approach where all students, beginning in their first year of the program, are subject to what design theorist Axel Kilian would define as learning “*the interstices of the understood and that which is yet to be discovered*”. The significance of the design-build project is not just in its placement within the program and the design pedagogy behind it, but also in how it marks the beginning of a larger, more fundamental curricular vision. This vision of design-build pedagogy integrates the blatant and latent lessons of full-scale, hands-on experience into the entire Five-year M-Arch curriculum.