NCBDS 00:34

2018 Program : **Time** : University of Cincinnati : March 1-3, 2018

ABSTRACTS

The Contemporary Predicament

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Keywords Future, Imagination, Media

A B S T R A C T
Inundated by the ever-expanding challenge of responding to the plethora of environmental and socioeconomic forces that shape our contemporary reality, architecture finds itself at once distinctly equipped to address these issues and obstructed by procedures and mechanisms that have long limited its capacity to play a central role in reshaping the built environment. Meanwhile, new tools and technologies are providing schools and practices alike with a continuous stream of challenges and possibilities. Overwhelmed by the mandates of an inescapably complex context, the discipline seems to be stalled in a temporary, yet extended moment of amnesia, forgetful of much that has happened in its recent past, leaving considerable gaps in its pedagogy and practice.

As such, this paper expands on the pedagogical approach of a course I taught at the American University of Beirut on contemporary history and theories of architecture, a core course that picked up where the last course in the history and theory sequence left off in 1945(!) as a compilation of lectures that covered everything ranging from the Holocaust to 'autonomy,' skipped the digital paradigm, and delivered arguably the most provocative lecture on New Monumentality and Critical Regionalism.

The course set out from the hypothesis that we are the product of our sociocultural and disciplinary milieus and ventured to contextualize the project of architecture in the later part of the last century in respect to the broader context of the built environment. A number of texts, projects, and ideas were engaged in order to read and understand 'A'rchitecture, as a discipline engaged in building culture and producing knowledge, as it relates to the construction of isms, styles, and paradigms. The course did not purport to produce a linear intellectual history of contemporary architecture, but a series of histories within which many discourses and agendas may be contextualized.

Practice Sessions: A Model for Intensive, Engaged Learning Experiences

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Keywords Speed, Focus, Experience

A B S T R A C T
The teaching and learning of architectural design are often separated from the practice of architecture and its primary concern with buildings. To caricature the divide, one might say that the academy (where architecture is presented as a form of knowledge production) views practice as merely pragmatic and restricted by the chains of capital, or that practice (where architecture is presented as the physical constructs which shape our cities and our lives) views the academy as merely conceptual and restricted by the impracticalities of unending freedom. This opposition is a false one that weakens our ability to appropriately prepare today's beginning design students for lives as architects. The boundaries between the academic institution and professional practice are increasingly blurred as corporate offices embed "studios" within their organizations, as students participate in design/build projects for clients and communities, and as digital culture breaks down barriers of entry to notoriety, publicity, and impact through dissemination. Practice Sessions, a curricular program at the University of Michigan Taubman College of Architecture and Urban Planning, addresses this relationship between the academy and practice through immersive, intensive, engaged leaning experiences. This paper presents Practice Sessions as a model for supplementing traditional, semester-long, individual studio projects with intensive bursts of collaborative design that expose students to the problems of practice and broader educational contexts.

Practice Sessions is a five-year pilot program co-organized by Assistant Professors Ellie Abrons and Adam Fure of Taubman College and Assistant Professor Andrew Holder of Harvard's Graduate School of Design. The program invites one internationally renowned practice each semester to "import their practice" to the school for a four-day intensive workshop with students. The workshop briefs frame a problem or project from the office as a mini-syllabus and each Session culminates in a panel discussion and review. The events take place in the physical center of the school, the College Gallery, where they are performed for a public audience of students, faculty, and staff.

Assessment of the program, now in its third year, is done in collaboration with the university's Center for Research on Learning and Teaching (CRLT) and implemented through anonymous surveys and focus groups. Findings show that Practice Sessions has significant impact in the following ways:

> • *Bursts of intensive focus offer students important, alternative platforms for skill building and creative output.*
>
> • *Contact with an inspirational figure from outside the school can be transformational, reversing the typical structure where students leave the academy to pursue "real-life" experience through internships.*
>
> • *Positive collaborative experiences that focus on a common problem offer students a relatively risk-free environment to be bold in their propositions and act as citizens rather than in their individual interests.*

This paper uses knowledge gained from Practice Sessions to demonstrate the importance of short-term, immersive, engaged learning experiences for beginning design students.

Generative Topographies // Liminal Spaces

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Keywords Precedent, Imagination, Skills

A B S T R A C T
Time's agency in design has been one of constant impact; affecting the tools, approach, and resolution of design. Situated within the theme of SHAPING TIME - Leveraging the Past, the paper encourages the expected diversity of beginning design students while advocating for the implementation of advanced digital tooling as a strategy to evolve design pedagogy. Design education must equip students with the necessary skills to respond to the complexities, constraints, and demands of the present while working towards a responsible future. Despite a consensus among design educators that technology is an integral component of design, first year instruction has generally steered towards manual conventions. Incoming students are digital natives with unique backgrounds. Building on this diversity while developing the commonality of a digital dialect establishes a culture that encourages students to explore ideas and take risks while providing them with advanced digital and analog tools needed for creative production and communication. This requires understanding design as a process in contrast to a final product. Process is an introduction to the agency of time in design. Further, it is essential that the concept of time in design assumes a cyclical -as opposed to a linear- evolution, allowing for skills and thinking to develop convergently, thus, enabling students to merge digital and analog workflows and logics. This approach acquires more necessity within the context of current design culture where digital tools cater to a trivial commitment to a product.

As an example, Generative Topographies // Liminal Spaces, was a project assigned in the first semester to freshmen in architecture and interior architecture. The project was the introduction to the design process and directly aimed to familiarize students with design fundamentals including visual logic and presentation tools. Centered around the theme of process being a valued conclusion to design problems, the project challenged two common pedagogical conventions: the sequence and premise of precedent use in design education, in addition to when and to what end digital tools are incorporated in a design student's first project.

In the book Drawing Futures, Bryan Cantley calls for "discover[ing] the performance logics of how the ideas/drawings behave as opposed to their pure visual characteristics" (Cantley, 2016, p.187). Building on this premise, the project focused on evolving selected paintings into three-dimensional spatial constructs through a series of digital and analog processes. The integral employment of these paintings served as the basis for developing an artificial terrain and imagining spatial possibilities. It allowed the precedent to transcend the reference modality. Furthermore, generative digital functions allowed students to graphically dissect the layered surface of their assigned painting and interpolate topographies that are derived from the conceptual and compositional logic of the image. While the digital functions enabled the students to design the complex liminal spaces, it was necessary that this process start with the analysis of a haptic object (the painting) and work towards deriving from its manual brush strokes and accumulated layers a digital topography that expand on the compositional and formal findings of the original painting.

Living Architecture: Time-Based Processes

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A B S T R A C T
"A posthuman continuum between human, nature, and technology becomes increasingly evident in the smart materials, sentient systems, and ubiquitous communication networks that populate the urban environment today. The contingency of these organic and technological categories provokes new questions for architecture. For how many different species do you design? How responsive is the envelope of your building? How does your building engage the material and discursive forces of its site?"
    — *Ariane Lourie Harrison, "Charting Posthuman Territory"* [1]

From Fake News to Real Fictions: Leveraging Populist Formats in Architectural Representation

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Keywords   Media, Imagination, Distraction

A B S T R A C T
This paper makes a case for how popular media and populist formats can offer beginning design students an expanded opportunity to communicate spatial designs with position (agenda), plausibility (worldly enactment), and personality (character).

While traditional print-based pop media such as posters, yard signs, and billboards remain relevant, cultural communication increasingly relies on digital social media platforms for distribution and consumption, casting memes, image macros, and animated GIFs into starring roles. If we use social media as a litmus test for the contemporary popular psyche, then the memes and video loops that frequent the average Facebook feed suggest that these "low-fidelity" visualization techniques are particularly well-suited for engaging the human imagination, emotion, and humor—especially within the state of digital distraction that characterizes the contemporary student workspace. This paper explores how students might co-opt these populist formats and lo-fi techniques from the domain of frivolous internet novelties into the realm of rigorous architectural representation.

The animated GIF in particular offers an instructive case study. Unlike the realism provided by more cinematic videos and sleek three-dimensional "fly-throughs," the stop-motion-like animation techniques integral to the GIF file format expand the possibilities of more traditional architectural representation by using the perception of moving content to exaggerate elements, soften boundaries, augment artifice, and assert agenda.

Lo-fi animations augment the participation of both its makers and consumers. Because the process of crafting GIFs does not require an extensive amount of technical training, beginning design students can enter the making process quickly and precisely. Both vector drawings and raster image content are equally accessible to animate as a moving sequence of precisely composed stills, making animations broadly applicable to a wide range of architectural media. In contrast to the stationary condition of conventional architectural representation, the temporal quality of moving images challenges students to exercise a heightened degree of rhetorical bias and to think critically about constructing new audiences as much as new worlds. Akin to other "cool" media formats, the animated GIF's intentional resistance to realism and its low-fidelity output capacity also provides more opportunity for audience interpretation and participation.

This paper presentation will share samples, elaborate, and speculate upon my students' animation work from courses that I recently piloted on this topic at the Illinois Institute of Technology and the School of the Art Institute of Chicago. The work aims to re-imagine the cultural relevance and future efficacy of architectural representation in order to render it more timely (i.e. engaging contemporary social and political media conditions) while calibrating time (i.e. exploiting the temporal and tempo-based parameters integral to frame animations). In turn, the ideas aim to guide students to produce a body of precise, well-crafted, and disciplinary-informed visualizations that are simultaneously serious and playful.

Clarification of relevance to conference theme of TIME:
The paper aims to re-imagine the cultural relevance and future efficacy of architectural representation in order to render it more timely (i.e. engaging contemporary social and political media conditions) while calibrating time (i.e. exploiting the temporal and tempo-based parameters integral to frame animations).

Acts of Interpretation: The Plane of Non-Agreement

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Keywords   Media, Imagination, Open-ended

A B S T R A C T
Everything is known, including that which is still unknown. The Paranoid-Critical Method (PCM) is both the product and the remedy against that anxiety: it promises that, through conceptual recycling, the worn, consumed contents of the world can be recharged or enriched like uranium, and that ever-new generations of false facts and fabricated evidences can be generated simply through the act of interpretation.
    - *from Delirious New York: A Retroactive Manifesto for Manhattan by Rem Koolhaas. 1978*

Acts of Interpretation reflects upon the creative process and examines an alternative design methodology for the conception of spatial ideas. This pedagogical approach incorporates a series of steps that biases writing, embraces qualitative accident, and finally yields representational artifacts positioned somewhere between the written word and the physical construct. For this particular series of assignments, the beginning design student is asked to accumulate brought-together elements and place them into what Max Ernst referred to as his plane of non-agreement. The source material for the assignment, the worn, consumed contents of the world, is language culled from issues of Vogue magazine that is by default a representation of contemporary culture. Students scour its pages for wording that strikes them as having a strong visual and auditory component. These fragments are then crafted into written prose with the underlying charge to challenge the perceived limitations inherent to conventional representational techniques. In many ways, this work is more closely related to the development of a screenplay where one's ideas about what constitutes place are quickly inhabited by dripping gutters and coke bottles filled with sand. The process evolves with the translation of the student's prose into visual triptychs that expand upon their newly discovered hallucinations and secret desires. Text from the first assignment is positioned on the middle panel. On the left, students generate a diagram to serve as a kind of construction manual that illustrates the organizational strategy of their prose. The right panel consists of images that draw heavily upon what the surrealist artist Salvador Dali, in describing his PCM, defined as a "spontaneous method of irrational knowledge based on the critical and systematic objectivity of the associations and interpretations of delirious phenomena." These images are not meant to infringe upon the freedom of the reader but instead expand the potential visualization of their written prose and touch the viewer's soul to some degree. As a new thesis begins to emerge out of the exercise, the project evolves into a series of drawings that continue to provide alternate readings and form the foundation of a time-based composition that incorporates sound and triggers interstitial readings. Ultimately, through this process of conceptual recycling, the worn, consumed contents of the world can be recharged or enriched like uranium.

Sparks: Smart Materials & Electronics in Landscape Architecture Education

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Keywords   Technology, Imagination, Future

A B S T R A C T
As mediators between nature, culture, and technology, designers are strategically positioned to influence the way resources are used to shape our environment, while embedding meaning in the spaces we build. In designing for the future, material practices are challenged to create abundance, rather than solely minimize resource consumption.   To achieve this goal, new approaches to material practices and the development of new technologies are needed. While there is rapid growth in the research and development of new materials in the engineering and science fields, exploration into their potential for design applications remains limited and within the realm of industry and product development.

The gap of knowledge between innovative materials and their implementation for design applications – which entails both technical and human implications – places design students in an optimal space for experimentation, failure, and trying their hand at dealing with the unprecedented. From a pedagogical perspective, it offers the opportunity to place students in the role of innovators and creators of technology, rather than solely as consumers. Doing so provides opportunities to evaluate the role of design education in fostering technological innovation and provides insight into the value of transcending boundaries of design as part of the beginning design student experience.

This paper will present student work involving innovative material investigations for landscape architecture applications developed in two courses taught at the University of Massachusetts Amherst: Material Experiments in Landscape Architecture and Step and Flash: Creating a Piezoelectric Walkway. Although focusing on smart materials, such as piezoelectric and photoluminescent technologies, this paper also present other innovative material investigations that explore energy production and electronics and their relationship to plants and other landscape media. Harnessing designers' abductive strategies of inquiry, with a focus on generating multiple possible explanations, these courses engaged both design and non-design students in the development of innovative material prototypes demonstrating potential applications in outdoor spaces.

In conclusion, this paper will present the benefits and challenges of introducing design students to technological innovation through interdisciplinary exploration. It argues for the pedagogical value of experimentation to advance the role of designers in shaping future technologies, and for better supporting a culture of originality within design education. By preparing students to travel through the uncertain path of innovation, they will be better equipped to creatively solve future design challenges.

From Beginner Towards Experienced: Learning to Articulate Designerly Form with Basic Visual and Spatial Schemas in Architectural Education

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A B S T R A C T
In the early years of their education, beginner design students simultaneously develop various perceptual and intellectual skills. Their learning goals in the first years are primarily focused on composition and basic design: to increase skill in recognizing perceptually what design elements they are seeing, and to understand how these elements come together in their ongoing compositions. As students improve in the hands-on activity of composing, learning goals begin to expand to include inquiries about process, creativity, imagination and style: to understand what it means to be creative in processes and products, to improve imagination in and through each design iteration, and to start developing individual style through understanding what resonates viscerally and intellectually with them.

Today we have an excellent literature on the classical pedagogies of composition, which has culminated into successful discussions of these topics and pertinent methods especially applicable to the initial stages of design education. However, with the increasing integration of computing and digital technologies into design education, and our expanding understanding of human creativity, learners and instructors alike seek new ways of framing their complex creative activities. Eloquently developed in the last decades of the twentieth century, innovative design theories, methods and tools have been productively guiding us as we now think about design as a temporal, procedural and systematic activity.

Among these, the shape grammar theory and formalism provide us a procedural and rigorous, yet open-ended and indeterministic framework to formulate design processes. In this framework, this paper discusses the teaching of visual-spatial design as the teaching of artistic and designerly computational processes. Computational design theories formulate holistic design processes into algorithmic steps, which are also designed by the designers themselves. In a computational design process, each step corresponds to a design action that designers take – a frozen moment in the temporally continuous design activity. The continuum is punctuated by the analog or digital application of rules. Rule applications momentarily and temporarily discretize the process, which then again resumes in an open-ended manner.
A systematic framework that explicitly formulates how artistic and architectural shapes are perceived, how they can be articulated and recorded, how they can be put together and how design processes can be organized and directed greatly help students achieve success, insight and motivation. This paper theoretically elaborates on design creativity and imagination through the shape grammar theory. Practically, it elaborates on design creativity and imagination that was especially fueled by basic visual-spatial schemas through three case studies – three student projects in a beginner architectural and landscape design studio.
In the development of these projects throughout the semester, the instructor (the author) generated her feedback on designerly form and composition by employing visual-spatial schemas in her reasoning. This helped both the learners and the instructor to better articulate formal interests and possible directions. Understood as particular unique processes that unfold in a given time frame, students increased control over their design activity, by better understanding how to structure it, organize it and measure it - in form, quality and time.

Bridging Analog and Digital to Create Presence

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A B S T R A C T
It is important for today's educators to embrace the habit of multitasking that students find themselves striving more and more to excel at. It is also critical for us to help guide students through the multiple toolsets, both analog and digital, that define their modalities of working. Educators must embrace the fast and immediate forms of working, while finding ways to elaborate on these outcomes to extend the process of the work using longer time frames.

Traditional curriculums often polarize the use of digital means versus analogous techniques. At the College of Architecture and Design at Lawrence Technological University, an updated curriculum has been introduced within the freshman-level architecture courses, Visual Communication One and Two. These courses now introduce students to a cyclical workflow from digital to analogous toolsets. Within the five introductory assignments titled Point, Line, Surface, Form, and Space, students are exposed to short bursts of quick, immediate learning experiences. The students are then asked to elaborate for longer more focused spans of time on the results from the short-form work. These two modes of working (fast/slow) are continuously engaged throughout the semester.

Students must leverage toolsets such as basic analogous drafting techniques using pencil, ink, and charcoal with digital tools such as photography, Photoshop and Illustrator. For example, the use of smartphones is encouraged for quick and simple documentation and composition purposes as part of the first assignment in course one. Not only does this build on what students today are already proficient at (snapshot culture), but the first critique of this brief leads to conversations about taking time to focus on small details and specific elements of their daily rituals. Assignments throughout the semesters purposefully compound on themselves, encouraging students to recall skills used in previous assignments to help execute the next one. This challenges them to understand which method of working is appropriate and how proficiency and time can direct the work they are doing.

All means of the student's production must get filtered or interpreted through different technologies. These assignments demands focused time, as well as interrupted bursts of time, but all in conjunction with one another. Students learn different processes have different time requirements and different results based on time spent with the tool. It encourages students to remain present throughout the workload as they witness their own making of time during the work itself.

We have found that if framed as a nonlinear process, students are able to use their proficiencies at multitasking to augment their work. The examples below show both modes of working that students are expected to continuously revise during the course. They apply multiple toolsets (photography and digital manipulation) to take a position on composition. They assess their work and take a risk spending long hours replicating these compositions with analogous tools. This establishes layered thinking which I believe helps to focus students' skillsets to bring out subtly and their presence within the work.

Parti Boxes and Palimpsests: Leveraging History in Teaching Design Principles

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A B S T R A C T
Understanding a historical discourse is essential to the success of future design professionals. A comprehensive knowledge of precedent allows for innovation and experimentation by maintaining a diversity of thought, yet engaging beginning design students in architectural and design history courses is often challenging, as the presented material is temporally removed from contemporary culture. While history is an integral component of design education, it is often divorced from the greater context of the architectural design studio due to the lack of connection between the material and modern instruction. With a variety of students entering the design professions, leveraging their past experiences and proficiencies

together with historical dialogue helps to engage them in the study of history as precedent and process. This practice redefines the purpose and definition of historical concepts and "time," while reinforcing introductory studio principles. Innovative teaching of history using studio techniques, such as diagramming and analysis, presents the opportunity to [re]conceptualize design history curriculum in a way that engages and encourages students to understand the historical record as integral to the design process.

In opposition to the traditional pedagogy of design history education where students are asked to memorize and regurgitate fact, asking students to research, process, and implement core theoretical methodologies behind the design of buildings from multiple time periods through conceptual models teaches an approach to design beyond aesthetics. To counterbalance the desire to treat precedent study and architectural history as a form of aesthetic stimulation, research analysis provides a deeper reasoning for students to understand processes through time beyond mere visualization. With parti as the driver in this synthesis, students are able to move beyond the literal copying of form or aesthetic and instead into a generative theoretical study, thus producing three-dimensional diagrams conceived in research and achieved through design principles.

This paper examines and illustrates two projects given to beginning design students as part of architectural history education that introduce methods of scholastic research, and allow for innovation in contemporary design. The Parti Box project asks students to research and produce multiple parti diagrams associated with the design of historic buildings, and then arrange these diagrams into three-dimensional layered and interactive diagrams that describe the design processes, methodology, and thinking behind the construction of the architecture. Building on the essential concepts of the Parti Box project, the Parti Palimpsests project asks students to investigate the subsequent interaction between the multiple parti diagrams, to create a three-dimensional diagrammatic model that also addresses change over time. The resulting models, and the research that accompanies them, leave the students with a full understanding of the design rigor invested in the building and how this motivation was leveraged to produce critical architecture. The heterogeneity of the projects within the homogenous historical record further morphs architectural history into a community endeavor, where students are versed in the chronology, specialize in particular movements, and educate their fellow students in the importance of historical design processes.

Play and Epistemology

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Keywords   Imagination, Individuality, Beginning

A B S T R A C T
Play and epistemology are both important in their relationship to beginning design education. Independently, play and epistemology offer important aspects to human development. Play offers emotional, cognitive, and social rewards while epistemology offers imagination, curiosity, control and knowledge of one's surroundings. They are closely bound in their relationship to design education by providing a meaningful context for students to learn concepts and skills, encourage risk, exploration, and also discovery.

While epistemology is usually a more solitary experience that helps us determine the sources, structure and limits of our knowledge, play can be accomplished individually or more effectively in the classroom. Both epistemology and play are needed to build the foundation to test our limits, see rewards and share our experiences.

Freud stated that play is the means in which a child could fully express himself. Even if we are unaware of the expression, play is the outlet for the emotions to be released. This theory of art is focused around a central theme of motivation to create, and what we want to create is hidden and hard to interpret. According to Freud, to "…take inter-relations between the impressions of the artist's life, his chance experiences [epistemology?] and his works and from them construct his constitution and the instinctual impulses at work in it…" [1]

Only in human culture do we adults 'objectify' play into desiring intended behavior. Only very young children seem to play without expected outcomes. Sketching can reopen the categories into which we normally organize and shelve the common experiences of daily life and perhaps challenge ideals. The innocent present in children's artwork is misappropriated from us by the time we mature. Some believe that our artistic talents are repressed, but can resurface. Educator Karen Gallas shares her belief that "art can play an essential role in forming and extending all aspects of a curriculum."[2] It can also break language and emotional barriers. She also positions that students convey their understanding of their world around them more effectively through play, music, and the arts.

We as art educators can help beginning design students better understand or interpret a concept, or express themself through art and design by reminding them of a time when they used their imaginations more freely. We must allow students the flexibility to explore mediums and the freedom to convey the messages they are trying to express. That exploration is done through epistemology. Learning from mistakes and what works. Play allows us to share our knowledge with others. One could argue that students can no longer strive for simple self-fulfillment, but are constantly assessed according to the performance standards of our economy and educational system. Art and design education may be the only outlet left that allows students the freedom of expression, perhaps giving society a vehicle to express what the masses are thinking. Through experience in classroom exploration and industry connections, this paper and presentation will showcase aspects of play that encourage creative outlets and freedom of expression which enhance the learning objective.

[1]The Biology of Art, Joyce McPherrin, www.public.wsu.edu/~kimander/biologyofart.htm, 2005
[2] Play = Learning, www.udel.edu/~roberta/play/benefits.html, 2006

1992: Lessons from the Past

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Keywords   Past, Technology, Beginning

A B S T R A C T
This paper presents a focused study and reflection on a specific moment in time: 1992. This is the year that Charles Wallschlaeger and Cynthia Busic-Snyder published their classic design fundamentals textbook Basic Visual Concepts and Principles. This text likely represented the quintessential educational approach to beginning design education used in many American design schools throughout the 1990s. It presented consolidated content that addressed both two- and three-dimensional basic design concerns using a process-oriented approach that the authors argued had relevance for art, architecture, and students of design of all kinds.

At its heart, the text focuses on connecting problem-solving to form-generation in a process-oriented way that embraced the integration of new technology. By 1992, personal computers had already enjoyed a decade of evolution since being designated Time magazine's Person of the Year. Still, their potential as a tool in design education was in a state of infancy. Wallschlaeger and Busic-Snyder saw the years leading up to publication as the turning point from America's industrial focus to the formation of a more prevalent "information society." The rapidly accelerating emphasis on new technologies for design production and manufacturing and the transformation of the role of the computer to shape the ability to communicate ideas in new ways presented a challenge to design educators and students alike. What were they to make of their emerging capacity to manage complexity and craft in ways that were not previously available? What did they forfeit in the move toward accommodating evolving technological capacity?
The authors of this classic text provide us with some of the answers to these same questions that challenge design educators today. They argued that a more comprehensive approach that "integrated user needs and involvement, affordability, resources, environmental conservation, and the ability to produce through industrialized manufacturing methods" was more relevant that a focus on pure form generation. Predicting that the incorporation of computer-aided design in beginning design education would transform how students approach visual problems and solutions, the authors proposed that, reminiscent of the rise of industry in the nineteenth century, the design educators of the 1990s were faced with a fast-moving technological evolution that necessitated the promotion of new methods of working, new modes of teaching, and a revised expectation for what can be visualized and achieved.

This paper is based on a series of conversations with Charles Wallschlaeger, now 86 years of age. These interviews explore how he perceived that the presence of new technologies presented both challenge and opportunities to design educators who were both fascinated with and intimidated by the potential that the computer represented in the hands of their students. The interviews also aim to capture how the will to anticipate technology's potential frame the essence of what it means to be fundamental and to master basic design language and processes that are not media-specific.

[1]Charles Wallschlaeger and Cynthia Busic-Snyder, Basic Visual Concepts and Principles, (Boston, MA: McGraw Hill, 1992):5.

Geometries Past, Modern, and Future

Developing a rigorous approach to complex form through historical techniques of geometric description

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Keywords Skills, Beginning, Precedent

A B S T R A C T

This paper presents the work of Arch201, a second semester undergraduate design studio at the University of Pennsylvania. The mission of the undergraduate program in Architecture is to develop basic skills, knowledge, and methods of inquiry in the discipline of architecture within the context of a liberal education in the arts and sciences. The program provides for the study of architecture on three levels of engagement: a Minor, a Major, and an Intensive Major.

Studio courses in Penn's undergraduate program are, as put by the program's chairman, Richard Wesley, "grounded in a critical appreciation of contemporary digital architecture—neither an uncritical acceptance nor an unappreciative critique." Over the past few decades, tools for "flexible surface modeling (Rhinoceros 3D) and visual scripting (Grasshopper)" have offered designers the opportunity produce and manipulate complex forms and double curved surfaces with ease. These tools operate by transforming static geometry into para-metric models, sets of geometric relationships. However, in providing designers with "easy access to the difficult processes of computation" these tools suffer from their own inherent biases (Gage, Software Monocultures, 2010) and obfuscate the range of geometric proce-dures that underlie the production of complex forms. To counter this, Penn's undergraduate program aims to equip students with techniques and ways of understanding geometry (in both two and three dimensions) which allow them to better control these digital tools and approach the production of complex form critically, with precision and control.

Within the scope of the undergraduate curriculum, Arch 201 serves as students' first introduc-tion to the analysis and design of curved forms. Drawing upon graphic methods of the distant past (17th, 18th and early 19th century treatises on stonecutting and descriptive geometry) as well as some concurrent with the era of architectural modernism (the early 20th century drawings of D'Arcy Wentworth Thompson), this studio asks students to choose and analyze some natural form—animal, plant, or fungus—and study its formal properties, qualities, and characteristics. Students may choose to study any aspect of an organism, from its overall form, to specific anatomical features, structural principles, or even patterns of growth. Each student develops their own means of describing these natural forms, both graphically through geomet-ric procedures and verbally. They then use their findings and developed methods to generate an "analogue," some construct that embodies the properties, qualities, and characteristics of the natural form. And finally, taking their "analogue" as a prototype, students propose a small-scale architectural project sited within a particular landscape.

Architectural Elements: Wall to Roof and Floor to Window

Panelist/   Jennifer Bonner
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                Harvard University, Graduate School of Design (reporting on coordinating the
                second year undergraduate sequence at Georgia Institute of Technology)

Keywords Future, Imagination, Media

A B S T R A C T

A first year undergraduate studio uses individual architectural elements as the starting point for a series of design problems over the course of a year-long curriculum at Georgia Institute of Technology School of Architecture. For incoming undergraduate students, there is a familiarity with commonplace building parts such as wall, roof, floor, and window. Even more so than an inherent understanding of organization, proportion, or spatial sequence. Each of these basic fundamentals are known prior to entering the design studio, yet rather than making a project with all elements at once, the studio examines each in isolation. Rather than introducing site and program as a primary influence for the architectural design process, this pedagogical experiment relies on the removal of too many tasks, one where deduction is encouraged over addition.

The studio undertakes a close reading of each archetype, by rigorously analyzing a series of canonical architectural precedents as well as the more quotidian examples found in the context of the ordinary. Students explore techniques of "copy-paste" as a methodology for plan-making and three dimensional formal studies using found material from historical and conventional precedents. This paper will outline methods of copy-paste while also illustrate the outcomes of a pedagogy concerned with individual architectural elements.

The Moment of Beginning

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Keywords   Beginning, Imagination, Skills, speed

A B S T R A C T

The beginning sentence of Edward Said's Beginnings defines the problem of beginnings as one that would "confront one with intensity" both the theoretical and the practice levels. The same is the beginning of architectural education. In this paper, two foundation design instructors will carry on a dialogue, sometimes confrontational and sometimes agreeing, to interrogate the what, when, and how of such beginnings in terms of both fundamental and current issues. This paper intends to formulate a teaser rather than an investigation to ad-dress a complex situation. The objective is to present conflicts rather than to find solutions.

What are the foundations of architectural studies?
B: Critical Thinking
Architect's main objective is to think clearly and consequently with the nature of a given problem. Furthermore, critical thinking becomes a vehicle to approach the relationship between societal demands and architecture as a social art.

H: The Complexity of the Discipline
Architecture is a discipline and a non-discipline at the same time. The critical task is to both help students develop the understanding of the essence of "building" and challenge their preconceived idea of architecture and make them realize the existence of architecture out-side "building" both literally and metaphorically.

Where to start?
B: The Sequence
Two aspects are fundamental in my studios. First, design is understood as a kind of research in which it is explored the relationships between the space production process and its results as a consequence of a certain attitude or intention. Second, the methods and techniques used in this exploration are developed in order to identify and reflect upon the architectural artifact's inherent spatial and structural orders through a series of exercises that go from the abstract interpretation of space and its representation to the architectural, situated and specific object.

H: The First Project
To present the complexity of the Architecture discipline in front of the students, I choose the first day and the first project as a critical point of departure, using a warm-up exercise to engage students in a fast forward experience in architectural design.

How to start?
B: Concepts
Art and Architecture operate on common foundations. Architecture first exists as represen-tation. Its ultimate purpose is to exist in the physical world where it can be experienced as a manifestation of certain social conditions. Art is a concept that encloses all creations in which a sensible vision, either internal or external of the world have been developed. It is a vehicle that allows ideas, perceptions and emotions to be re-presented through plastic [visual or not] resources. Architecture is the interaction between reason and emotion. Everything that is part of the architectural process is a consequence of these two forces. Reason and emotion create a discipline that is the result of both right and left parts of the brain acting together in a singular motion. Basic design composition principles are introduced within the context of architectural representation in order for the students to internalize the relationship between spatial thinking and its implications in architectural programming.

H: Tools
Tools of representation and realization are critical in that they both empower and limit students' exploration about architecture. With the increased accessibility of digital tools and the prevalence of digital fabrication, the moment of beginning is in question again. Have we entered a world where we naturally think digitally? Is manual drawing merely a nostalgic performance?

The Fast & The Fruitful

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Keywords   Speed, Constant, Imagination

A B S T R A C T

The Fast & The Fruitful presents The 2017 Urban Edge Award – A series of three, fast and fruitful four-day-long design workshops that reimagined urban waste to produce spaces that are socially, culturally, environmentally and economically sensitive. The theme of this year's Urban Edge Award was From Waste to Wonder. Each design workshop had a unique theme, site and cast of characters. From Waste to Wonder participants developed design projects at a variety of scales that explored issues of Urban Vacancy, Adaptive Reuse and Productive Landscapes. Collaborators used the power of design to re-imagine post-industrial situations where cultural, social, economic and environmental issues are foregrounded and fortified. The Urban Edge Award culminated with a day-long final review and public symposium where the workshop research and design projects were presented, discussed and debated amongst the invited keynote speaker, Walter Hood, the six design workshop leaders, students, faculty, stakeholders and city officials.

The Urban Edge Award structure set up a series of design discipline questions that were tested through an iterative, semester-long process. These questions can be broken down into the following lines of inquiry:

Pedagogical Approaches
The Urban Edge Award seminar structure experimented with a fast-paced, multi-perspective design charrette approach to pedagogy in contrast to the more traditional single-voice, semester-long design seminar and studio. Both design workshop leaders and seminar students were required to think and act in a focused and somewhat frenzied manner to develop design briefs and proposals, respectively, that were simultaneously insightful and intuitive based on site specific research and experience. The semester ebbed and flowed, with time built in to oscillate between intense ideating during design charrettes and pensive periods to digest, discuss and develop design ideas.

Creative Processes
Throughout the semester, both seminar students and design workshop leaders were exposed to new creative processes. Each design workshop asked two design professionals to collaboratively combine their creative processes to develop their specific design workshop brief. Thus, throughout the semester, seminar students were exposed to six individual and three hybridized creative processes, as opposed to only one, which is more typical in traditional design seminars and studios.

Collaborative Practices
Collaboration happened in numerous ways throughout The Urban Edge Award semester. For each design workshop, the two design professionals collaborated intensively to develop their design charrette approach and articulate their design charrette insights. Seminar students worked collaboratively in groups of three throughout the entire semester to develop three site-specific research and design projects - One project per each workshop.

The Fast & The Fruitful presents The Urban Edge Award in the context of pedagogical approaches like the charrettes of the École des Beaux-Arts, the creative processes outlined by Kyna Leski in The Storm of Creativity, and the practices of bricolage as defined by anthropologist Claude Lévi-Struass.

Biotechnology Revolution: How Mushrooms Will Save the World, One Module at a Time.

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Keywords Future, Sustainability, Technology, Adaptability

A B S T R A C T

As resiliency becomes increasingly pertinent in today's conversations about human environments and natural ecologies, it becomes even more pressing that the architectural community join forces with the natural sciences in order to have a significant impact on the manufacturing, construction, occupation, and post-deconstruction of the built environment. Not only is this conversation imperative for the architectural community to have, but it is also crucial for the beginning design student in order for them to gain a foundational mindfulness towards the concept of biological applications in architecture. According to Synthetic Aesthetics "The nineteenth Century was shaped by the mechanization of the Industrial Revolution; in the twentieth century, the silicon circuitry of an Information Revolution reconstructed modern life. Now, some predict biotechnology will be the foremost driver of change for the twenty-first century." Through collaborative endeavors, biologists and architects could alter the current course of standards and practices in the design and building industry. Although biotechnology as a whole encompasses larger and more advanced issues at hand, we should begin by simply looking at one small, but vital, piece of the puzzle: Materiality. By using more organic and biodegradable materials, we can distance ourselves from antiquated and harmful production practices. We can no longer simply look at lifespan, but must also take into account life cycle. One such bio-composite material that is offering new opportunities in design and building materials is mycelium inoculated substrate; and it has the potential to make a significant impact on building systems.

Currently, many exciting things are happening in the world of mycology (the study of fungi) on a range of different architectural scales and applications. By engaging with these efforts, the architecture and design community can create the opportunity for an entirely new set of methods, assembly, and implementation. Fungal Colonies, also known as mycelium, are a matrix of complex carbohydrates made up of numerous glucose molecules that appear to be a culmination of white divisions of filaments called hyphae. This network of branching fibers, when in ideal conditions, will eventually create a fruiting body more commonly known as a mushroom.

In pursuit of biological synergy, this paper will further discuss a second-year design studio project, Biological Booleans: home grown geometric solids, in a Fall term design studio. This project served as a bridge project that mediated students' transition from first year to second year curriculum. The students were given a warm-up exercise that assisted in the transition from first year, introduced a prescriptive design process, and an overview of working with bio-composite materials, mycelium. It is imperative to educate the beginning design student on the notions of biomaterial applications to aid in their understanding of their potential to alter the building practices in the future.

Design in Place: Immersive Learning through Design Research and Cultural Craft- A Pedagogical Approach for Educators

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Keywords Place-based education, Experiential learning, Cultural craft

A B S T R A C T

Today there is a necessary shift towards sustainable design futures where value is placed on transparent processes by which objects are equitably designed. Therefore, it is increasingly critical for design students to be introduced to concepts of cultural, environmental and social sensitivity earlier in their education, since value is about cultural, social, environmental and economic factors (Walkers & Takamura, 2015). This investigation utilizes first-hand observation, participation, and creative making in context to explore the effects of immersion on students' appreciation for historical and present-day culture.

Drawing from experiential learning (Kolb & Kolb, 2005), place-based education (Gruenewald, 2003) and a trend analysis methodology (Voelker-Ferrier & Brandewie, 2015), this teaching/learning approach explores ways to enhance students' creativity, design, and craft capabilities by considering and contextualizing culture in both time and place. How does location/environment inspire craft? What do artifacts symbolize, and to whom? How are our observations and reflections

of culture interpreted through design and form-making? The aim of this analysis was to answer these questions by exposing students to communities where craft is an embodiment of culture.

In order to answer these questions, we developed a pedagogical approach to be taught as part of a high-school design workshop on the theme of Native Hawaiian cultural literacy, traditional craft-making and field studies during the summer 2016 in Waimea, Hawaii with 5 students and 1 adult educator. Students first learned to capture, acknowledge and question their observations in a process journal using a technique traditionally practiced in a college-level trend methodology. It was critical to expose students to sites of cultural significance and introduce indigenous craft methods by local experts. This fostered an authentic experience and challenged cultural stereotypes.

Students became more knowledgeable of culture through analysis of temporal artifacts to identify value shifts, which were then acted upon through applied making. We observed that students could better translate their insights appropriately, as proved in the final designed artifacts created as part of the workshop. Their observations inspired printmaking ('ohe kápala), barkcloth making (kapa) and natural dyeing with endemic plants/materials. Students developed new symbols that translated traditional stories of Native Hawaiian culture in a contemporary context, ensuring socially equitable outcomes. We found that important student takeaways were learning to design authentically through first-hand experience with the people and places visited.

A student noted:

> "My favorite part was making stamps, and I really liked that we learned about making prints. I learned the biggest part of design is the research part so that you get a really good idea. I learned that you have to pound the kapa; it is a very long process to make kapa and it is very difficult and now I respect a lot of people who do it".

A theory of place is concerned with the quality of human-world relationships and must first acknowledge that places themselves have something to say. Human beings, in other words, must learn to listen (and otherwise perceive) (Gruenewald, 2003). Through this workshop, we will help educators introduce place-based creative inquiry, design research, and craftsmanship to students at an earlier stage in their education. The model is adaptable to various locations, cultural contexts and design outputs. We will facilitate a conversation about culturally equitable and successful design courses taught afield, and hope to assist educators in the planning and execution of their own experiential design workshops.

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Collaborative Beginnings: Developing Collaboration Skills in an Interdisciplinary Design Seminar

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A B S T R A C T
Design practice is rapidly becoming more collaborative and integrated, facilitated by emerging technologies, and prompted by economic realities, environmental concerns, and humanitarian needs. These changing paradigms require fine-tuning the development of the professional skills associated with collaboration. As co-designers of significant built environments for the last few centuries, architects and landscape architects are historically among the closest of collaborators. However, their distinctly different disciplinary training begins early. By the time they are working on projects together, the relationships between these designers can occupy a spectrum wherein they may merely coordinate their efforts or they may participate in a truly integrated design process.

This paper and presentation will discuss the development of an interdisciplinary design collaboration seminar at the University of Massachusetts that included both architecture and landscape architecture students. The seminar occurred prior to the students' participation in their first joint design studio and focused on understanding the collaborative nature of the professions as well as current research on creativity and collaboration. The seminar provided skill-building in the interpersonal aspects of collaborative work through active exercises including: asset mapping, defining team roles, understanding decision-making structures, discussing cross-cultural expectations, and creating a team contract.

The seminar was developed simultaneously with field research conducted with leading design practitioners on the topic of collaboration in their practice. Themes that were important to design projects featuring architect-landscape architect collaborative teams led to particular seminar modules and exercises. By analyzing data from two years of student course evaluations and from design studio faculty feedback, the paper will consider the impact of intentional skill-building in collaborative practices on beginning designers in their first interdisciplinary design studio.

Questioning the Finite: Lessons in Structural Design and Adaptability for Beginning Design Students

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A B S T R A C T
Beginning design students frequently view architectural design as a process that culminates with a built structure that is often regarded as transient and disposable after serving its original intentions. As educators, how might we effectively alter student perceptions and propose new attitudes towards the built environment that question the concept of finite and encourage a thought process that is fluid, organic, and adaptable? This paper examines the work of second-year architecture students who were presented with an opportunity to think and adaptively respond to learned lessons from failure throughout the design process as part of their initial studies into structural principles and concepts.

As an exercise intended to encourage students to consider ways in which structural behaviors and architectural design can inform one another, students were challenged to fabricate a thirty-inch vertical structure using repetitive or modified patterns with specific material palette restrictions. The initial expectation given to the students for the project was that each design would be tested to support a minimum weight of seven pounds. The project was dually entitled "hollow column/stick tower" in an effort to persuade students to consider the project at a multitude of representative scales.

Upon testing the strength of the structures to meet the minimum loading requirements, the project was continued and the hollow column/stick tower was reconsidered as a new design problem for the students. Each project was placed beneath a robotic arm, which compressed the structures in incremental steps towards failure until the structural assembly was left in a damaged state. The projects were then returned to the students with a charge given to design and fabricate a prosthesis, using different materials, to once again make their project capable of supporting seven pounds. For this phase, students were required to leave their project in its current damaged state and not repair it back to its original configuration. Instead, each student was asked to address their prosthesis as a complimentary and critical element that responded to the vulnerabilities of their damaged structure, allowing the student's original designs to have a second life as a structural assembly.

The intention of this paper is to explore the lessons and learning outcomes of a design project that persuasively introduced adaptation after failure, with evolving criteria based on the actions and discoveries of the previous phases within its duration. The robotic arm served as a device that allowed each structural assembly to generate a new form while exposing the vulnerabilities that led to failure. The prosthesis design and fabrication asked students to consider ways to extend the life of their designs in an adapted state and make their assemblies structurally capable again. It is the author's belief that asking students to explore and exhaust potential responses to emergent criteria established in the phases after the initial testing can help teach beginning design students to be more adaptable in their approach to the design process, appreciate the lessons learned from failures, and question architecture as a finite entity.

Machines in the Garden: Instrumental Simulations of Conceptual Ecologies

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A B S T R A C T
In teaching landscape architecture students about core principles of landscape ecology, Richard T.T. Forman defines a model as "the simplification of a complex system to gain understanding." (Forman, 2014) His simple yet elegant definition situates two important and distinct issues addressed in this paper: tactile simplification toward tacit understanding, and the rational or

logic-based challenge of diagnosing design opportunities within complex large-scale systems. Forman, like other ecologists uses a modified scientific process to break down what initially appears to be chaos into legible and discernable patterns for the sake of recognizing their broader relationships and in order to anticipate how they might accrue and self-modify over time.

In practical terms, this form of anticipatory learning is arguably well suited in the earliest stages of design education. James Corner reinforces the early-introduction of such foundational concepts, stating that "the process by which ecology and creativity speak are fundamental to the work of landscape architecture. Whether biological or imaginative, evolutionary or metaphorical, such processes are active, dynamic, and complex, each tending toward the increased differentiation, freedom and richness of a diversely interacting whole." (Corner, 1997), arguing convincingly that ecological comprehension is a fundamental challenge in the training of beginning design students.

This paper discusses a series of projects that extend this argument into the classroom, challenging students to read fine and course-grain patterns in nature while fostering design experimentation through mechanical instrumentation. Testing and probing first-hand with physical, non-representational material including water, soil, plants, bacteria and yeast, students learned to recognize fundamental dynamic patterns and processes. Next, traced through a series of critical projects that demonstrate learned anticipation of key temporal aspects of environmental systems more broadly, the projects track material changes, each with their own unique time frame, within complex and dynamic natural systems. Analog and digital models, photography, video and subsequent diagrams break down the composite accretion of material[ity] in each experiment. This enables a replicable form of open-ended exploration, and due to the infinitely-scalable nature of the mediums used, provides corollaries with and reflective discoveries of material arrangements in much larger systems. The culmination of the work was organized in a multimedia exhibit.

Addressing Stress for Adults with Autism Spectrum Disorder through a Multi-Semester Investment by Interior Design Faculty and Students

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Keywords Community, Chaos, Finite

A B S T R A C T
Whether one has an autism spectrum disorder (ASD) or is "neurotypical," uncertainty is often an antecedent to stress. A VCU Community Engagement project, Designing a Place to Be: A University-Community Partnership for Addressing the Needs of Adults with ASD, design directly confronted uncertainty through interior design.

ASD is a neurodevelopmental disorder that is known to lead to difficulties in social communication and interaction. Many individuals with ASD also experience sensory processing disorders. Certain sensory stimuli are variously perceived as stressful and chaotic or soothing. For the adults with ASD in question, caregiver focus groups described that music, movement and opportunities to create order were perceived as particularly soothing while sudden loud sounds, physical contact and constricted or isolated environments were stressful. Through focus group results and direct interaction with adults with ASD, VCU design students accessed information to design environments to reduce perceptual chaos.

Interior design students were given two primary objectives: 1) to directly interact with individuals with intellectual and developmental disabilities and the spaces in which those individuals functioned; 2) proposed thoughtful modifications to spaces and activities that acknowledged sensory preferences of adults with ASD.

This paper details the benefits of living and designing more inclusive and sensory conscious environments. The short-term impact of the project was that design students directly confronted their anxieties about how to respectfully engage with adults with disabilities while simultaneously assessing person-environment fit. Student design strategies were also presented to disability researchers and the chief executive officer of an adult day center. A process for incorporating proposed materials and space configurations is underway. The adult day center is currently seeking long-term involvement of VCU design students in ongoing projects to modify activity spaces to reduce stress associated with ASD and sensory processing disorders.

Art Stars: Rattling Their Cage

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Keyword Past, Beginning ,Uncertainty

A B S T R A C T
As a Department of Art & Design situated within a research-based university, our Foundation curriculum was much in the manner of the typical beginning sequence of lock-step courses. Upper-level students commiserated with Foundation students and were once overheard saying, "Yeah, Foundations, you just have to get through it." Our curricular approach failed to effectively consider the range of high school experiences of our incoming Art Stars. For some, from intensive art and advanced placement programs, it seemed to be a rehash of their self-determined confidence. For others, it was an expanded studio environment, yet routine, narrowing, and too much about basics. In other words, Foundations was a waiting period and not stimulating enough to get students engaged.

Our faculty commenced discussion to rectify this circumstance by reviewing our teaching resources, studio environment, and the learning development of first- and second-year students. In order to revise and shape an improved structure for our curriculum, we considered how students perceive and process their experiences. They enter our department with a caged viewpoint of what they already know from high school and their intention to conform their university art and design experience to fit their expectations. To understand this scenario, William G. Perry's model of intellectual and ethical development was a significant resource, along with Dr. Michele DiPietro's more recent research-based principles for learning. Recognizing the incremental transition in student growth within the time of the first and second year, our Core curriculum, implemented in 2015-2016, immersed students in hands-on art and design practice. It is a cross-disciplinary skill-based model including all studio disciplines. Art and design principles, outcomes, and lexicon are emphasized according to the essentials of creative process, skill, technique, and equipment within each of the twelve studio disciplines. The two-year Core is about breaking down pre-conceived precedents and building up a skill set that embraces uncertainty. The Core seeks to prepare Art Stars for the substantial jump in development from makers who reflect on process to thinkers who make. The Core fosters ambiguous breadth prior to selected discipline depth in the third and fourth years.

Our studio-wide approach encompasses increased interaction of Core students with Advanced (third and fourth year) students and nurtures studio camaraderie. Discipline-based studio faculty are Core faculty teaching first and second year students as well as supervising graduate teaching assistants teaching Core courses. The Art and Design Living Learning Community, supporting first-year Core students with live-in Advanced art and design Peer Mentors, is located in the Residence Hall closest to the art and design studios. This presentation defines aspects of curriculum revision and explains two years of implementation. It includes the comprehensive Core Review process in spring semester of the second year along with student and faculty observations and reactions to rattling their cage.

Building Creative Confidence: A Review of Literature and Implications for Beginning Design Studios

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Keywords Skills, Imagination, Beginning

Relevance to the conference theme "Examining Time: Past, present, and future": This research discusses how the past often consists of education that trains students to conform which limits creative confidence. In the present, as educators, we should be build student confidence and give them tools to think differently so that in the future, they will become innovative problem-solvers.

A B S T R A C T
Children are creative and daring. Somehow, over time, most adults do not consider themselves creative. We are taught to conform as we grow up and our experiences eventually affect how we approach thinking creatively as adults. Worse, many adults seem to believe that they were just 'not born to be creative.' This myth leaves these people to conclude that creativity cannot be learned even though there is ample evidence that creativity can be learned. Students who lack confidence in their ability to think creatively often struggle to come up with novel answers to problems when there is a need for students who can come up with novel solutions to the world's problems. The question is, "How might we turn back time and build back the confidence for students to be daring and different again?" The goal of this research is to identify pedagogical practices that encourage or inhibit creative confidence in beginning design studios.

This paper reviews the primary literature on the psychology of creativity as well as teaching creative confidence. It identifies components that may encourage or inhibit creativity in a beginning design studio. Research methods included a search of the related literature using Google Scholar and Science Direct. Keywords used in the search included: creativity, teaching, design, and confidence. Peer-reviewed articles and published books were included in the search. Articles and books that did not apply to either general knowledge about creativity or design or higher education were excluded from review to focus on the literature most pertinent to beginning design studios. The literature was examined for main ideas and then compared to other books and articles in order to identify similar ideas and themes that encourage creative confidence and thinking.

Based on the literature reviewed, characteristics were identified that contribute to the foundation of thinking creatively. The characteristics related to creative potential include personality, knowledge and experience, motivation and curiosity, risk-taking, failure and the ability to deal with the social and contextual influences on creativity. Pedagogical implications were also identified that could be applied to beginning design studios in order to build confidence. These implications include tools for idea generation and how to create a studio environment that cultivates creative confidence.

Creative thinking is necessary for our students and our professions if we want to look beyond the status quo and solve the challenging problems our society is facing now and in the future. Nurturing creativity from the beginning of a student's educational experience can facilitate growth through time and improve their ability to problem solve. Helping students gain confidence to think creatively will prepare them to become better practitioners and to make more significant contributions toward their profession.

"Oh, the Places You'll Go": Using History to Map Place and Self

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A B S T R A C T
In Oh, the Places You'll Go, Dr. Seuss states, "You're off to great places! Today is your day!" Interpreted for design students it brings up questions as how will they get there? How long will it take? What is a great place? Where is there? In the quest to know, maps have been guides to parts unknown, bringing people together and separating them. History by nature is time based. Time in maps is both a historical construct and one acknowledging constant change in the relationship between self and place. For centuries maps have held a role as the gateway to discovery, including the past. Currently, interactive and two-dimensional depictions are methods to understand place, identity and time requiring symbols, icons, and images. Today we speak of wayfinding, we are guided by voices; the struggle of refolding a flat map is nearly obsolete, but the experience of imagining place, identity, and time passing is still relevant.

The early medieval Hereford Mappa Mundi created a Christian viewpoint of the world filled with beasts, boundaries and events not experienced, yet believed. While the Mappa Mundi considered place and history over centuries, by the time modern transport had become the ubiquitous urban tool for traveling from place to place, the anxiety inducing speed of modernity required new comprehension of time and distance in order to succeed. Harry Beck's 1931 London Tube map is an example of an early twentieth century individual's understanding of a sprawling city filled with masses of people that needed to be navigated quickly and with little worry. How to make a city accessible is as tricky a question as how to be self-aware enough to navigate one's past and future. In the 2000s artist Grayson Perry questioned maps as a way of understanding ourselves in the world bringing us from our GPS experience back to the Mappa Mundi concepts of our world and how to navigate it.

For beginning design students, simple concepts of place and how to get there rarely intersect with their ideas of identity of place and self, both in the present and historically. They must recognize design as an experience that goes beyond an image and textual relationship to one of emotion, experience and culture. We live in a period of rapid information influx compressing change into narrower segments of time. This presentation considers the concept of mapping self and place through historical case studies of both art and design to not only reconsider where we are, but how culture defines who we become over time. Our global society is functioning more frequently through a nationalistic lens, what difference does how we experience place make? How is technology changing how we experience the world?

Questions of worldview, technology-driven anxieties, and the unseen network through which we function needs to be addressed early on in a student's education. In doing so a sense of agency and responsibility can be fostered with a more sensitive perception of how time, place, identity and culture are formed, experienced, and visualized.

Operating Manual: Connecting Past and Present Through Project Based Learning

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A B S T R A C T
This project combined historical enquiry and analysis with graphic design fundamentals of page layout and typography in an undergraduate student project. The goal of the project was design a contemporary cover for, and to typeset the manuscript of, Operating Manual for Spaceship Earth, a short book published in1968 by futurist and designer/architect R. Buckminster Fuller (1895-1983). The text lays out some of Fuller's core ideas about society, capitalism, and–most importantly–the concept of Earth as a self-contained spaceship and humans as astronauts, responsible for its maintenance and upkeep. In its time, Operating Manual was a popular text with the counterculture, consistent with Fuller's position as an unlikely hero of the American counterculture. But as with many other texts from its time, this book has been largely forgotten today.

This book lends itself nicely to a student design project; long enough to require chaptering and organization, but short enough for students to read and analyze. Indeed, it was the opportunity to read and reflect upon the content in this instance that made for a richer learning experience. The question became how to introduce college students to the historical importance of an unknown text, while at the same time allowing them to draw their own conclusions as to its meaning and relevance–if any–today. What were the elements of countercultural idealism that students of today would respond to? Would they pick up on the nascent environmental and social justice messages implicit in Fuller's text about living on this self-contained "Spaceship Earth" in which it was a shared responsibility steward the limited resources available for the benefit of all?

Students found the historical text both inspiring and challenging. Fuller's style of writing is somewhat rambling and dense, yet the larger picture and its call to action and sense of urgency was not lost on the students. They easily saw its relevance to current global environmental issues. They understood the metaphor of the spaceship and its power in describing humanity's common goals and needs. Students were encouraged to find conceptual frameworks for their books–to use metaphor, allusion, current or historical examples, provocation–in order to emphasize and complement Fuller's message(s). By giving them somewhat different perspectives from faculty (one historical/empirical/research, the other poetic/conceptual/graphic) students were able to develop design solutions deeper than they would if they had been simply given the text and asked to interpret.

The project in its entirety promoted not only the development of design skill; it promoted design historical enquiry and literacy, analysis of primary texts, exposure to early notions of sustainability, and abstract thinking within a project-based and collaborative learning approach. The relevance to time includes the incorporation of design historical texts and analysis into an undergraduate studio project; and the re-interpretation of historic texts with students through discussion and collaboration.

Craftsmanship as an Educational Concept

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A B S T R A C T
As part of a larger inquiry into the educational value of craftsmanship, this paper engages the historical record in regard to design practices as manifestations of the practices of craftsmanship—particularly where that record is educational in nature. While the age of mythology sets the scene for basic Western conceptions of the origin and role of design, it is the era of Roman Imperialism that gives us the first written treatise that can be considered a guide to design education. Marcus Vitruvius Pollio authored the first known treatise on design education to have survived the ancient world. Written in homage to Augustus, the de Architectura was composed in order to educate Augustus about the buildings, devices, and machines of the Roman Empire and to provide an educational structure for the discipline of architecture.

For Vitruvius, the education of designers involved education in the realms of knowledge that existed in the ancient world—areas of knowledge that basically cohere to C.P. Snow's theorization of a binary system of knowledge in the physical sciences and knowledge in the humanities—and, while not obviously articulated by Vitruvius, I argue that he theorized a third area of knowledge; a knowledge in the material properties of things that constitute the base materials of designed artifacts (a situated, craft knowledge that is only gained through the acts of making and judgment); a knowledge of practices in craftsmanship.

Finally, I will conclude that if the practices of craftsmanship are defined as that set of activities which produces innovative physical artifacts that act to mediate humankind's relationships with the natural world, then an educational philosophy based upon craftsmanship can act as a critical foundation for contemporary beginning design education. Engaging this philosophy and these practices in the beginning design studio will be discussed as a methodology for educating designers that are capable of creatively and appropriately responding to the challenges that we all face in a time of unprecedented change.

Making Time: Diversity and Undergraduate Education

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Keywords   Diversity, History, Community

A B S T R A C T
Issues of race, class, and gender diversity have become some of the most significant challenges in undergraduate curricula. It is particularly difficult for faculty to engage these issues when they are simultaneously tasked with ensuring that students are prepared to begin professional careers. This problem is amplified in architectural education where educational standards have consistently become more focused on the needs of practice rather than the intellectual development of our students. In an environment that is fixated on producing graduates who are immediately productive, it is difficult to find room to discuss diversity and social equity. While diversity and inclusion have been recognized as necessary to educational practice, it has remained difficult to significantly integrate them into our courses. In this paper, the authors discuss how they have begun to integrate diversity awareness through extracurricular research at the undergraduate level.

For the last two years, the authors have received funding to lead undergraduate research that engages perceived diversity issues. These grants are open-ended and allow for research directions and implementation strategies that move beyond typical classroom engagement. As such, the authors have developed opportunities for our National Organization of Minority Architecture Students (NOMAS) chapter to perform research and to disseminate that research within our School, our College, our University, and the broader community associated with our city. Our first round of funding allowed students to research the design work of ethnic minorities and to present their findings in a local gallery. That research might be categorized as the gathering of biographic and professional information that was presented through posters and research papers. Our second round of funding built upon that work and addressed the contributions of women in the design professions. In addition to posters that highlighted the accomplishments of women in design, students also created an installation that interrogated female space as portrayed in southern literature.

Student research led to the conclusion that discrimination against women, and the definition of traditional female roles, can be viewed as a spatial problem. Spaces that have traditionally been considered female—predominantly domestic spaces—have been conceived of, designed, and constructed from a male standpoint. Resultantly, spaces occupied by women are created without adequate consideration of their female users. To express this discrepancy, students re-visioned several female spaces described in southern Black literature. It is within these narrative descriptions that the spatial intricacies that define traditional Black southern female and matriarchal roles are found. Such exploration and re-visioning allows for opportunities that can address these intricacies; providing a means of educating future generations of designers about the importance of diversity and social equity in the design professions. As a result of their analysis, our students designed and constructed an installation that interprets how the perceived identities of race, class, and gender are presented in narratives describing southern spaces. This installation, the Hope Empowerment Reclamation (HER) House, is a "structure in process" which explores the relationship between the portrayal of black feminine roles in literary space and actual physical space.

Through the Making: The Success of Failure

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Keywords   Adaptability, Future, Experience

"Opportunity is missed by most people because it is dressed in overalls and looks like work." -Thomas Edison

A B S T R A C T
The word 'design' can be used as a noun. It is a thing that exists. However, when the word 'design' is used as a verb it refers to the process of creation. This process, which unfolds over time, is an engaging and continuous process of interaction or a "conversation" (Schön, 1983) between the designer and the world in which they are designing. Intention must be present at the onset, but held loosely, as the materials themselves consist of constraints and possibilities that inform the maker as the process is unfolding. The actions of the designer and the reactions of the environment create a feedback loop (Koestler, 1964). Design is not a single act with a definite beginning and end, but an ongoing and generic (Goel & Pirolli, 1992) system of change. Each new action into the environment creates a new situation to be perceived and evaluated, shaping the artificial world through making, which in turn shapes the designer. The designer's decisions are "…transactions in the world [that] do not merely inform the perceiver, but also transform him" (Neisser, 1976), and their success or failure can only be understood retrospectively. A "failure" is nothing more than an attempt that teaches us something new and changes the way we perceive and approach the design problem. We cannot know that something will "fail" without the first beginning the process of creation. A "failure" is nothing more than an unintended result, which can lead to learning or discovery. Designers cannot hold too tightly to the original vision, allowing thoughts to change as the environment changes. Creation is not a manufacturing system. It is not simply manifesting an idea. The process, or journey, which unfolds over time, is critical to understanding how we create and how we can teach others to create. It is an inherent gift in us all, and can be developed and strengthened through opportunity. In design, we still tend to focus primarily on the successful outcomes or beautiful products, but the process of creating, learning, and discovering, which often looks like struggle and failure, is what ultimately informs the outcome of a successful solution. We need to learn how to fail forward, focus on the process of design as it unfolds over time, not be afraid to share creative revelations or try new things, and feed our creative spirit continually. We need to view the process as just as important, if not more so, than the product so we can better understand the minds use of nonverbal communications and ultimately to be able to teach others how to create.

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Playing with History: the Architectural Toy

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Keywords Historym, Experience, Imagination

A B S T R A C T
In a state of play, our observations and actions often teach us fundamental skills, principles, and ethics that we carry on in many applications and scales throughout our lives. From the words and actions of Charles and Ray Eames, the toy offers its users the power to inspire greatness and "seriousness" beyond a land of make-believe. Requiring students to analyze, design, and build a toy inspired by a movement in modernism, our studio considered the capacity of the toy to teach the "players" fundamental architectural languages, histories, and ethics. Through design, material, and the function of play, the users of these toys are able to celebrate progress within a "new" social construction, design for and with others, embrace differences and new ways of thinking, while also acknowledging an honesty within the process of making.

Additionally, this project acted as a stimulus for further historical probing within the design process, giving each student a chance to investigate each moment in history in greater depth, both grounded within architectural precedence and cultural contexts. As the first required architectural design studio, this research re-emphasized one's understanding of architecture as a reflection of the economical, social, political and ecological variables of its period. Considering our built fabric as histories frozen in time, a chance to build upon histor-

ical and visual literacies, each architectural style becomes an indicator differentiating and helping one understand what, how, and why conceptual and physical decisions were made in the design and construction of each structure or space. Acknowledging the importance of looking back to move forwards, each student's understanding of their movement's unique and shared characteristics facilitated an analysis and comprehension of each built environment, instigating conversations around the advancement of current and future designed spaces and structures.

Beginning by researching and analyzing each historical movement, students developed a narrative for their toys, further clarifying their decisions to help define the formal, material, and functional properties of their designs. As an interactive project, building into their toys a heightened exploration of history through the experience of engagement and play, users were consciously and subconsciously being exposed to an architectural history lesson. Through abstraction and imagination, designers and activators learn from and grow to see new possibilities within each historical context, furthering the pursuit for engaged and evolving architectural languages and discourse.

The False Premise of a Homogenous Curriculum

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Keywords Beginning, Diversity, Individuality

A B S T R A C T

How as design educators can we look past the fact that students entering our design programs come from culturally, economically, and racially diverse worlds? Is it unlikely that some of these same students who come from an urban environment, rural background, or suburban neighborhood have not received a proper education in art, never mind, design? How do we address this issue? How do we make the playing field as even as possible for everyone? Is that even a reality?

The concept of a homogenous beginning design curriculum is by its very premise unfair to students. This idea implicates that we can impose upon them a blank slate and wash away all that is unique about them. It also implies that we assess specific skill sets and critically analyze them utilizing homogenized standards. This forces educators to impose upon their students' learning outcomes that may not be attainable by all.

As beginning design educators, we must try to develop curriculum that is heterogeneous and unifies all of our students while celebrating their differences. Courses that introduce beginning students to the fundamentals of design are necessary so each student can understand and speak the same language of design. These courses should offer projects that foster the diversity of the class and showcase the unique talent and contribution each student may have. Creating classes where students feel engaged and motivated in the subject matter can help them safely explore their ideas and provide an inclusive learning environment.

Homogeneity and inclusiveness occurs in the classroom because of the technological and culturally diverse age in which students grew up, and not because of an imposed curriculum. This generation of students is accustomed to actively participating in their own life: they are active on social media, create their own videos, write blogs, and design their world. Values such as inclusiveness, flexibility, and curiosity is what binds them together. As students, they want to be engaged in their learning and participate in how the material will be presented to them. Studies prove that students want to act as critic, colleague, and mentor to one another.

The teaching methods used in my classes and explored in my research prove that students work more effectively in small groups, participating in peer reviews, teaching fellow students new skills, and receiving one-on-one feedback from me. This environment creates a classroom where students learn soft skills that are intangible. Soft skills are desirable attributes for students entering a global workforce. Encouraging students to fail and experiment more is critical. My students would not explore as much if I conducted the standard "big board" critique. The shame of failing and embarrassment of disappointing the professor would probably be too emotionally overwhelming. This paper highlights projects and methods used in a heterogeneous beginning design curriculum. The work I share will highlight the uniqueness of each student who brings their own aesthetic to a project given to an entire class.

Cultural Precedents and Historic Artifacts as a Springboard for Beginning Design

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Keywords Culture, Artifact, Translation

A B S T R A C T

This paper will discuss how we structured two initial short projects—in conjunction with a field trip—to lay important ground work for a cross-cultural studio that introduces students to designing in a country and culture other than that of the United States. The first half of the semester alternated between research and design components starting more broadly and becoming more specific as the semester progressed. This method provided a rapid-fire way to draw connections in the students' minds not only within and across cultures, but also between the past and the present—i.e. across time.

In order to introduce students to the rich and highly developed design culture of Japan, we assigned a variety of non-architectural creative Japanese works as a way of beginning the engagement process. Each student was asked to research a Japanese artisan/artist/designer of note to be selected from a list that included, among others, Shóji Hamada, a ceramicist, Rei Kawakubo, a clothing designer, and Chikuunsai Tanabe IV, a basket maker. Students researched the artist/designer generally, and then looked specifically at one artifact by the artist for further analysis. While the sources were deliberately diverse in interests, medium and time period, each could be characterized as having through their own work deliberated about how cultural values and methodologies translate across time and place, hence providing analogues for the students' own journeys.

Following this first assignment, we took students to the exhibition "Japanese Bamboo Art, The Abbey Collection" at the Metropolitan Museum of Art in New York City. We were fortunate that in addition to baskets, students were able to see ceramics, paintings, furniture and sculpture including the work of many of the artists that they had researched including Shoji Hamada and Isamu Noguchi. The baskets themselves ranged over a period of several hundreds of years, up to contemporary works.

Project 2 asked students to translate what they had learned about the working methods of their artist, along with inspiration from the exhibition, to develop a project with bamboo skewers, fuel tube and tissue paper. The impact of both the precedent artists as well as the basket exhibition led to structural and material investigations in Project 2 that the students will be able to take forward into the semester as the studio transitions into a building design.

Through this paper, we will discuss the importance of giving students a broad exposure to the design culture of another country, and to look beyond just architectural and building traditions. Further, we will argue the importance of seeing physical artifacts to enable students to understand how an object is made–images alone of objects prohibit viewing or manipulation from multiple or unusual angles. Seeing real objects, in addition to research and analysis, led to deeper understandings then manifested in the explorations produced for Project 2. The process let students internalize how culture can transmit and translate across place and time in surprising ways, and in turn bring greater insight and inventiveness to both the architectural project at hand and in their own methodological development going forward.

The Spatial Indeterminacy of Time: De[MONSTR]ative Architectures as Beginning Design Pedagogy

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Keywords Beginning, Uncertainty, Media

A B S T R A C T

"What would an ocean be without a monster lurking in the dark? It would be like sleep without dreams."- Werner Herzog

"What interests me is architecture as monster, those objects that have been catapulted into the city, from someplace else." - Jean Baudrillard and Jean Nouvel, The Singular Objects of Architecture, 2002

Time is arguably a continuing civilizational obsession. Whether observed through a plethora of digital or analog devices and machines with increasing precision, or manifested through disciplinary interest and epistemological quandaries, the essence of time remains simultaneously well-known and elusive. However, it is this dual ambiguity that renders it such a fertile vehicle through which one can channel introductory architectural pedagogy. It was with this indeterminacy in mind that a new set of exercises for a design foundations studio were developed. Inspired temporal cycles and systems, the UNLV School of Architecture's Design Foundation course—which must serve the dual constituency of beginning architecture and landscape architecture students—was redesigned and rebuilt around operationalized biological processes of aqueous [MONSTR]s as "site."

Beginning with research into the anatomical, structural, circulatory, and seasonal components of students' assigned "site," the De[MONSTR]ative architectures project was focused on creating a framework that facilitated reflexive operations between 2D and 3D representational modes of communication. Tasked with dissecting both static and kinetic features in a set of drawings that explicate spatial thresholds and transformative flux, students had to retranslate findings into paper and wooden dowel models before re-rendering them back into 2D drawings. Highlighting the power of repetition, layering, complexity, rhythm and composition, the students' work acquired a unique dimension tempered by the implicit obsession with time they had to integrate into their explorations. Furthermore, with each change in media, observation and analysis of what features retained mobility or acquired permanence, has resulted in a novel body of student work that encodes transformation alongside the devised gradated sequence of exercises making up this project.

This paper is the therefore the initial presentation of the work produced for this inaugural configuration of the De[MONSTR]ative Architectures project, launching a new set of dynamic pedagogies for the UNLV School of Architecture's beginning design student.

Creating Space for Diverse Design Culture in First Year Studio

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A B S T R A C T
Research Question
This paper considers the past experiences and hybrid cultural backgrounds that students entering into our programs arrive with. The authors set out to study the role of cultural diversity in the studio classroom across three design disciplines—environmental, graphic, industrial— questioning: Is the aim to provide space for the activation of student's lived experiences within studio discourse, or to reset a student's perspective by creating a common 'clean slate' for all students to begin from?

Purpose
At the onset of the study, the authors collected data on current teaching practices at OCAD University in order to consider 'cultural diversity' within the studio classroom. While this uncovered faculty intent(s) to address 'cultural diversity', the question arose as to whether or not these practices translated to the first-year student experiences. This paper focuses on the next phase of the study that seeks to identify and document student perceptions of 'cultural diversity' in the classroom and reveal whether or not students have an expectation that their education will be an indoctrination in dominant design practices.

Method
Semi-structured interviews were conducted with a small sample of student participants across three of six disciplines at OCAD University. This data collection was framed around the six educational aspects of studio-based learning: the setting of the learning space, assignment structure, design process, peer/mentor critique, assignment outcome(s) and evaluation. Using approaches from grounded theory (Strauss and Corbin 1990) interview transcripts will be analyzed to identify emerging theme(s) found within student responses.

Outcomes
This paper will present axial-coding diagrams of the student responses that reveal dominant themes uncovered through an analysis in context to the six aspects of studio-based learning. These dominant themes will then be summarized into visualizations (see Image 1 as example of data visualization highlighting emerging themes uncovered during the analysis of faculty interviews) in an attempt to reveal the student perspective on their first-year learning experience in context to 'cultural diversity' and dominant design practices.

Design/Build Education and Non-Traditional Practices

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A B S T R A C T
Architectural practice is changing. With a new generation of designers moving into leadership roles, and an increasingly complex world ecology to address, there is a fundamental shift in values taking place. Designers and students are less and less interested in the ego-driven architectural firm and the grueling 80-hour work week. Above the prestigious name-driven firms, both Millennials and Gen Z (or iGen) have been proven to value independence and autonomy, individual expression, and social awareness.

In my own practice, and in the implementation of curriculum in architectural academia, this way of working has realized itself through material and tool-driven research, one-to-one scale building, and unfettered experimentation. First-hand knowledge of materials and construction processes are not simply valuable because they expand a designer's practical knowledge, but they empower students to become independent and creative problem solvers. The study of architecture must equip its students with a rigorous and critical skill set that can be applied to a varied set of disciplines and problems. Hands on building experience allows for students to become fluid and direct practitioners capable of formulating diverse and satisfying careers.

In one example, through the implementation of a CMU design/build competition, students have taken on a design project with real-world consequence. After studying the modular, aesthetic, and cultural histories of this elemental building material, they then proceeded to engage in a five-week in-situ design/build experience. This being most students' first introduction to a full-scale construction process, they were asked to consider modular units, site specificity, and innovative methods of assembly. As in real-world practice, this project emphasized team interaction, communication, and learning-by-doing in order to successfully deliver.

Because my own practice is formulated in this way, I am interested in teaching students to think. That is, to develop an intentional way of practicing, and to be relevant and adaptable. Yes, teach specific skill sets, but also teach them how to be curious, how to learn, and how to formulate a practice that fits an individual and specific set of skills. Structuring a way of learning through design-build processes empowers students to develop their own generative tools with which to experiment, allowing this type of learning and generating to carry them beyond academia and into an uncertain future.

Difference and Synchrony in a History of Design

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Difference and Synchrony in a History of Design
In teaching history of design to first-year design students in the 21st century, common student behaviors and attitudes we see must be acknowledged and addressed. Incoming students have a different sense of time and space, different expectations and anxieties, than those of earlier generations – due in no small degree to their immersion in digital media. For a generation that resides in the immediate and the imminent, the importance of history is a hard sell. Meanwhile, today's teachers serve a more diverse and international population, challenging us to meet students where they are in knowledge and perspective, and to leverage such difference to the benefit of the entire educational enterprise. History becomes a way to address the value and possible meanings of these differences, while seeking rough universals of human experience. This paper discusses strategies for teaching design and cultural history to first year design students in light of these circumstances.

Space Engenders Difference; Time Synchronizes Difference
Students struggle to be fully present in a shared learning space; organic temporal structures – careful modulations of differentiated activity and modes of learning, attuned to their sense of time and to the value of difference – help them to remain present in the classroom space. Such modulations involve changing the time scale of activities, bucking linear paradigms for the teaching of information and concepts, and changing both the size of groupings and the relationship of individuals to a uniform body of knowledge. Work outside of class nurtures valuable difference; whole-class classroom experiences significantly synchronize differences in a shared experience.

Societies Differ by Geography; History Unfolds Differentially In Different Places
"The past" is present (differently) in societies at various global locations; constructing synthetic histories (interpreted correlational sequences) is a form of synchronization of knowledge. Concepts of timeline and relational mapping offer models for understanding positive implications of interconnected difference when seen as integral to useful narrative structures. These structures, used more freely or in a modular way, speak to the richness of difference, and help short-circuit the tendency to see as ideal one type of society or one location on a timeline of cultural 'progress'.

Cyber-Spatial Immersion Separates Us In Space, But Does Not Remove Demands Of Time
It is important to our first year curricular aims that design history be made as synergistic as possible in relation to the design studio experience. Good design delivers to different situations differently; but good design process entails enduring principles. Design benefits from integrating different perspectives; but must succeed in the real time of life's demands. This fundamental relationship of difference to universal time, crucial to a full understanding of the discipline, can be modeled in the material and methodology of a history curriculum which engages difference, but synchronizes it – by deconstructing assumed universals, such as linearity, to legitimate difference, and varying modalities toward uniform aims.

Architectural Projection in the Past Tense

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Keywords Future, Past, Imagination

A B S T R A C T
We may not know, simply by looking at an architectural drawing, if the space it depicts has ever been built. However, architectural drawings have past, present, and future tenses. A project often includes drawings in each of these tenses, and is both "recollective and prospective," with the designer seeing "not just what is apparent 'now' but what was seen in the past and will be seen in the future." Situating this point of view in the present, as is conventional, has repercussions which often go unexamined.

One form of the past tense is site analysis, with the draftsman's perspective situated at a threshold between what has been and what will be. The process of surveying a site is one where "the untamed, overlapping, and contradictory histories, remembrances, and engagements that cling to a place must be removed and subsequently replaced (or not) with simplified, coherent, and transparent representations" and "made compatible with the relations of production, state imperatives, and the order that both imply." This temporal situation implicitly projects a discontinuity between the past and the future. The project is the resolution of the political, social, economic, and environmental forces in the past and present, and is cast forward as a site of (new) activity that will be re-occupied, presumably forever more, as soon as the construction is completed.

Case study drawings, another form of past tense, document a place by inhabiting its history, through the political, social, economic forces informing it; drawings and texts about it; recording the effects of construction tolerances, marks of weathering, decay, or growth; its experiential qualities, traces of inhabitation, additions and modifications that have been made over time. This form of past tense aims to reveal rather than resolve the multiplicity of voices, forces, and stories that inform the architecture of a place, over time. The position of the draftsman is shifted from that of an inventor to that of a historian. Lebbeus Woods's drawings of "freespaces" in Sarajevo and Havana, of "architecture drawn as though it were already built – architecture built as though it had never been drawn," are in this past tense of the case study. They use the tense as a way of envisioning architecture that is provisional, collectively produced, and taking shape continuously - from occupation rather than for occupation.

In this context, the paper examines the pedagogical possibilities of architectural projection in the past tense, with two student projects. One is Barrio Libre de Sa Penya, which imagines the transformation of a gypsy neighborhood in Ibiza through the lens of an anthropological case study. The other is Fort-Zones: A Speculative History, which analyses the architecture of kid-fort zones in a small city, from 2040 back to 2015.

Discovering Historical Standards: Distinguishing Antecedents from Precedents

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Typically, architects consider historical standards as formal and stylistic precedents, which is implied by NAAB Student Performance Criteria A.7. NAAB requires students to be familiar with the traditions of architectural practice in order to appropriate or adapt previous solutions to common design challenges. The consequence of this interpretation is that architectural history is used to answer how a specific design problem was solved but does not overtly consider architectural history to answer the topical question raised by the design challenge itself. For instance, beginning students study various houses to assist in working out the arrangement of a private residence studio project, but often beginning students do not think to look at other architectural challenges of those houses such as foundations, the convenience of carrying the grocery bag into the kitchen, or the formal and material qualities of a room. Those are the standards of the Vitruvian Triad – firmness, convenience, and beauty – which direct students to engage with the desires of architectural customs and conventions, the antecedents of architecture, rather than recent practical solutions found in precedents. Historical standards can thus be interpreted as those practices which are rooted in the past but are still found in the present that touch on why we need a building rather than how we build it or what are its citations.

This second year studio developed two assignments on using standards to help students distinguish between precedents and antecedents. In the first exercise, students worked in pairs to make a measuring standard. Its precedent was the vertical pole standard used as a reference device. Its antecedent was the desire to unify human body measurements with fixed numerical values. In the second exercise, students made scaled models of notable houses similar to the house design assignment the students would work on in the latter part of the semester. These historic houses set standards of living and were both precedent and antecedent studies. A precedent would be how rooms were arranged in each house and the antecedent would consider ways of living that were reflected in the arrangement of rooms. These assignments used architecture history not only to demonstrate how to use precedents, the NAAB criteria standard for teaching history, but invite a discussion on antecedents that identify standards for architectural practice.

Digital Time Burglars: Using a Distraction as an Avenue for Learning

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Keywords Technology, Focus, Distractions

A B S T R A C T
A beginning design student has a lot to learn. They need to learn design principles, concepts, and methods taught in the context of lectures and assignments which all combine to produce some type of designed product (the assignment goal). This is not an easy task especially with the distractions of today. Complete access to technology, music, and social media are pervasive in today's classrooms. As Bernard McCoy wrote in his study of digital distractions in the classroom, "Student usage [of digital devices] had risen to an average of 11.43 times in a typical school day and resulted in 20.9% of students' class time being distracted by a digital device…respondents said fighting boredom in the classroom was a leading reason they used digital devices for non-class activities." (McCoy, 23 & 28) While there is a need for technology and current digital abilities in design education, non-classroom related digital distractions are a challenge for any professor to deal with, or are they?

We first have to ask the question, what are digital distractions? Digital distractions are things that pull attention (eyes, ears, and thoughts) away from the class discussion, project work, or professor and are usually rationalized as being "connected." Students are graduating from high school with a greater connectivity than ever before. It is so natural, that it becomes a challenge to broaden the design horizon in terms of a project. It's not about the existence and practical use of technology but how it impedes imagination and self-discovery for the student.

However, digital distractions can actually be used as an asset in the studio and assist the student obtaining "flow," or total immersion in their work. This paper will discuss some practical methods of leveraging digital distraction as an avenue for learning rather than a time burglar.

Flexible Movement Along Continua Yields Greater Sensitivity in Spatial Design Solutions for Adults Aging with Autism

Panelist/ Jennifer Fell
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Keywords Community, Chaos, Finite

The Community Engagement project, Designing a Place to Be: A University-Community Partnership for Addressing the Needs of Adults with ASD was a unique studio experience for both faculty and students. The project initiated an exploration into best practices for design of interior spaces for adults with autism spectrum disorder (ASD). Students reached beyond the design studio into their larger community to consider design solutions nuanced for a special population previously unknown. Graduate and undergraduate students from two studios collaborated in a short-time activity at the project onset. Sixteen undergraduate and twelve graduate students grouped into four teams. After attending a focus group with researchers from the Rehabilitation Research and Training Center, phase one kicked off the first of five charettes. Each charette, lasting one week, investigated designs for single spaces for art, music, gardening, cooking and sensory props. The compressed charette work sessions either maximized or pressured time constraints for students.

The more expansive-time research investigation into ASD exposed students to myriad unfamiliar sensory experiences impacting adults with ASD or other sensory processing disorders. Adults with ASD can experience stress from an influx of stimuli that are perceived as chaotic. Conversely, adults with ASD may crave stimulating or self- soothing sensory experiences. The individual nature of sensory processing experiences presented many complexities to the charette designs. A sensory stimuli that might innervate one individual could present great distress to another. Students began to appreciate the importance of sensitivity, flexibility and thoughtful consideration in designing a multipurpose space for a population with individual singular needs.

At the close of the charette phase, students volunteered at A Grace Place (AGP), an adult day center. Students interacted with adults with various intellectual and developmental disabilities in the space they occupied daily. Students played games, danced or talked to the AGP members. After volunteering, many students stated that time "seemed to stop" during their visit- they experienced a sense of timelessness while they enjoyed the interactions. Time was a project factor with multiple definitions.
Rather than intersect, the short-time interruptions (charettes), the expansive-time solitude (research and design), and the "timelessness" of personal interactions overlapped across a spectrum. Varied client needs, multi-studio work modalities and multiple time and space dichotomies required flexibility to reposition ideas as variables warranted. The project unfolded along elastic continuums from the nascent ideas of charette work to refined solutions. The results were sensitive, a posteriori spatial and device solutions with potential for best practice identification.

This paper examines the dichotomies observed in this project's progression and proposes that rather than finite intersections or junctions, these topics exist in a spectrum. Flexible movement along continuums yielded highly considered and adaptable design solutions. Other dichotomies observed include:

> solitude + interaction
> knowledge + novice
> university + community [space]
> charette + independent work [time]
> self (inward) + others (outward)
> stimulation + chaos

Big Time

Panelist/ Heather Flood
Artist *Associate Professor and Chair of Undergraduate Architecture*
Woodbury School of Architecture

Keywords Future, Imagination, Media

A B S T R A C T
Architecture is big. As a discipline, it collapses conceptual, technical, and political landscapes into discrete geographies that contain complex ecosystems. As a profession, it collapses structural, material, and mechanical systems into discrete objects that contain complex organizations. Architecture's intellectual spectrum is vast and technical range is broad. The bigness of Architecture poses many curricular challenges. Not least of which is where to begin.

Most architecture programs are organized in a similar way. There are design studios, history / theory courses, technical courses, and representational courses. Most architecture programs cover similar content. There is structure, program, site, mechanical systems, and environmental systems. What distinguishes architecture programs from one another is how they manage the range of mastery required of an architectural education. The sequence of responsibilities over the course of a program is unique to each school.

Within academia, lamination is the most common system of managing Architecture's bigness. The laminated model is additive with content being introduced in a linear sequence. Foundation courses are often narrow in scope and have a limited range of accountability. As students' progress through the curriculum the scope of concerns broadens and the range of accountability increases.

Big Time proposes an aggregate system for managing Architecture's bigness. It's an everything all at once model of education. Foundation courses are broad in scope with a wide range of responsibilities. Over time, the complexity of the problems increases. This paper will present foundation studios currently being taught in the first year of the BArch program at Woodbury School of Architecture that embrace Big Time as a system for managing Architecture's complexity. These studios demonstrate the capacity of first year students to synthesize a broad spectrum of concerns in a single project.

Furthermore, this paper will contextualize the concept of Big Time in foundation education against the historical back-drop of the Polytechnic and the Beaux Arts. This paper will also argue for the timeliness of Big Time in embracing the multi-tasking talents of upcoming generations of Architects.

Future Factory

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Keywords Future, Imagination, Media

A B S T R A C T
Future Factory (FF), led by Prof Wendy W Fok, Assistant Professor of Integrated Design at Parsons School of Design Strategy, is a student led research group and laboratory investigating the access and ownership of technological information that is distributed amongst the various private and public players within New York City.

Through a design led practice, FF team of urban investigators, researchers, and strategists are dedicated to collecting data from public and private sector entities with the intention of promoting open sourced information as an instrument for growth, improvement, and the operation of urban environments.

FF finished product will consist of an open source digital platform, publicly accessible through the Parsons School of Design website, inviting and promoting direct citizen engagement. Across the 2017 academic year, FF will host a series of panel discussions with designers, policymakers, urban technologists, and agents of change.

Currently, the FF is working with Civ:Lab on case studies and development onto the May 2018 Smart Cities event and conference, with both intermediate and lower level undergraduate and graduate students. This opportunity is to speak to the larger diversity of data, city planning, and infrastructural studies that lead urban strategies, within the pedagogical development of research and development.
New York City will lead as the target city, with hopes of eventually expanding the scope of research to Europe, Asia, and Latin America.
We are:

> • *Student Led / Faculty Driven*
> • *Urban Research & Development*
> • *Open Data for Better Cities*
> • *Socially Responsible*
> • *Publicly Engaged*
> • *Future Focused*
> • *Providing Public & Private Connections*
> • *Provocative*
> • *Transgressive*
> • *Inclusive*
> • *Open to discussion*

"Beginner's Mind": The Essential Project of Paying Attention Through Multisensory Design and Representation

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Keywords Present, Media, Experience

A B S T R A C T

Could paying "honest attention" be the core objective of a design project? Even if the brief attracts the students' attention, how does it sustain it? A certain kind of slowness is necessary to be able to pay closer attention, and one way to do that is to ask students to abandon their most used facilities and adopt a new mode of operation in the world. This is the premise of the studio project where a group of fifteen students with completely intact vision consider a non-sighted experience of architecture, and the world.

In Body, Memory, and Architecture, Bloomer and Moore remind us that the senses are not autonomous modes of input but constitute a complex, networked system of perception. Within this system, vision works with, and essentially relies on the other parts of the sensory system to map out a cohesive experience of an environment. As a result of the "visualistic" approach to architecture, its representation has also been preoccupied with a singular pursuit, particularly of photorealism and the abstraction of surface and form. The image-based product embellishes the visual world, as a mindset, it disregards the other senses and treats the material world through its visual "shorthand." As a result, students are more preoccupied with how brushed concrete appears at a cursory look than its intricate texture against the hand or how cool it feels under the feet or how hollow it may sound. The nature of the problem is cyclical: architecture students are not fluent with non-visual representation and therefore focus only harder on the visual, largely missing the gamut of visceral—slower—experience their designs might engender.

To intervene within the cycle, one strategy for developing a design problem is inspired by the Zen principle of "beginner's mind," referring to an attitude of openness, one that may exhibit itself by paying attention in a new way, unfiltered through preconceptions even at an advanced level. The premise of the project is to consider the sensory experience and representation of architecture through the design of a community center for the blind and vision-impaired. Students begin the semester with a collaborative exercise, an unsighted site analysis, which result in interactive and mixed media installations. In parallel, they revisit canonical works of architecture and create interpretive representations of their sensory experience by incorporating the temporal dimension into conventional analysis. Ultimately, they develop designs through a series of multimedia experiments, with consideration for the multisensory experience over time.

What initially seems like a "loss"—lack of vision—transforms the challenge into a slower investigation of the body's full experience of the environment and, in turn, yields a much more "enriched" process. The students adopt the beginner's mind rigorously, and shift their attention both inward—to identify the true nature of their experience of the built/natural environment—and outward—to members of the blind and vision-impaired community to relate at a personal level and re-consider the meaning of "user" in architectural programming. As a result, the design process becomes more sustainable and less reliant of periods of "binge" production. Projects are not "objects of desire" but results of empathetic research, incremental discovery, and thoughtful development.

Learning Slowness: Impacting Students' Senses of Contemplation and Intention in Relation to the Digital World

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Keywords Focus, Experience, Media

A B S T R A C T

We currently occupy an era permeated by the discursiveness of digital platforms and processes. As our experience of the world becomes more immaterial and less phenomenological, our faculties for contemplation and reflection become diluted. First year design students are increasingly challenged by this paradigm, toggling between app-based environments and the real world demands of the design studio.

While rooted in history, stone lithography offers the unique capacity to unify digital and hands-on techniques as a contemporary practice. It provides an opportunity to engage physical, haptic senses along with visual and conceptual considerations. The drawn image and digital methodologies work in concert with material processes to guide personal development through trial and error. The past five years of teaching this medium to early design students have yielded many themes that are applicable across all design curricula. Students engaged in this practice learn through making, engendering deeper appreciation of process, technique, and creation.

Concluding this proposed case study and discussion, attendees will:
- *Understand the concept of teaching slowness and its impact on student reflection gained through practice*
- *Gain principles for increasing student focus in time-intensive disciplines*
- *Understand relatable methods for instilling the concept of "learning slowness" to their own practice*

Material Uncertainty: An Introduction to Digital Design and Fabrication

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Keywords Uncertainty, Technology, Experience

A B S T R A C T

Tim Ingold's Making (2013) frames design as a time-based development of form. Rather than discussing form as a preconceived idea, he describes it as a confluence of human activity, material performance, and environmental forces. This model embraces uncertainty as an integral part of the design process
.
In this course – an introduction to digital design and construction in architecture - we examine intrinsic material properties and their manipulation over time as the basis of design for building components and the spaces they construct. The tactility of materials grounds the learning of computational methods while the uncertainty of their behavior enriches this process through a hands-on experience of complex digital-analog relationships. To negotiate this uncertainty students must invent methods of working with materials at precise moments, while allowing materials to behave freely at others. Students work with an algorithmic framework of constants and variables to plan out these interventions. In this way "computation" becomes more than a tool to realize form, it becomes a way to think about and orchestrate networks of materials over time: encoding instructions about the material's manipulation which account for the uncertainty of their effects.

The outcomes of this approach tell a story about the behavior of materials over time. The traces of their manipulation – etched holes, twisted strands, surface impressions – are built into the final form. These traces fix the materials at a stopping point in time, implying further motion. A wood veneer could bend further, a plaster cast bulge more, a twisted strand gain one more degree of rotation. Their forms show what dynamic properties like thermo-plasticity, viscosity, and elasticity look like when captured in time.

Integrating these properties with computational tools not only emphasizes the dynamic potential of computational design processes. It grounds this potential in empirical knowledge of the physical world. In this way computation and materiality inform each other as time-based knowledge frameworks. Rather than documenting a fixed form, the computer is understood as an instrument for interacting algorithmically with the built environment over time. Likewise, rather than inert receptors of human ideas, materials are understood to be snapshots in a continuum of forces and energy over time. Shifting conventional understandings of materials and computation at an early stage in design education fosters a mindset in the designer that is more dynamic and nimble when confronted with physical demands of the built environment and new technologies with which to meet these demands. It fosters a mindset that can see a building through the lens of time: in what came before, what will come after, and what occurs dynamically within it over the course of its lifetime.

The Final Review is a Space and Time of Performance: Implications and Alternatives

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Keywords Prescribed, Diversity, Open-ended

Leveraging the Past: The final review as currently constituted risks limiting the diversity of design methodologies, communication styles, and social relations that should be encouraged in beginning design students. Spatially implying an antagonistic relationship between student and critic, the final review imposes a particular past derived from the École des Beaux Arts by encouraging do-as-I-do instruction. Furthermore, the final review temporally alienates students from their personal pasts and social present; from the processes, iterations, precedents, and people that contributed to their ideas and designs. This paper contrasts the isolating performance experienced by students with the co-creative design dialogue that the final review currently masquerades as.

A B S T R A C T

Design reviews or critiques, in all their variations, represent key moments of feedback and are a central part of design students' education. Of these, perhaps the most daunting for both beginning design students, and their more experienced peers, is the final review. The standard final review structure, with its origins in the École des Beaux Arts, has spatial and temporal characteristics common to architecture schools across the world. Students stand in front of a wall full of pinned-up drawings, often accompanied by a model, facing a panel of, at minimum, three critics, who are in turn backed by a wider audience of students. Thus, the final review is a space and time of performance that potentially limits the mediums in which projects are presented, the social hierarchies of those present at the review, and the types of feedback given. By maintaining the final review as a performance, architecture schools reduce its possibilities as a space and time of co-creative design dialogue.

Spatially, the final review is directly comparable to reality TV spectacles such as America's Got Talent or The X-Factor. In plan and section, final review spaces are both spectacular and oppressive, pinning the presenter and their work together in the direct gaze of critics and fellow students. This spatial format implies an antagonistic social hierarchy among those who participate in the review, reinforcing social power and the flow of feedback in a single direction: from reviewer to student. With origins in the master-apprentice dynamic of the guilds, and the master-atelier dynamic of the École, the final review encourages do-as-I-do instruction rather than design dialogue.

Temporally, the final review isolates students, setting them apart from their personal pasts and social present; from the processes, iterations, precedents, and people that contributed to their ideas and designs. Months of discussion and research are abstracted into minutes of presentation. This temporal arrangement influences the mediums in which work is presented, privileging a spectacular, visually impactful graphic style over more subtle representations of design, and favouring a finished product over representations of exploration, process, and iteration. Furthermore, although project grading is officially separated from the final review, many students fear this stand-alone performance is when the jury decides who makes it to the next round.

Thus, the final review spatially and temporally isolates the student as an individual performer, despite being touted as a space and time of collaborative exchange. This raises the question: "Fundamentally, do we consider architecture to be a collaborative practice or an individual pursuit" (Wingert-Playdon and Ng 2015)? The way final reviews are officially described suggests collaboration, while in practice their typical spatial and temporal format reinforces individuality. Architecture schools already enable a variety of spatial practices that support diverse social relations in the design process. Therefore, can we leverage these to reconceptualise the final review as a space and time in which students and professors engage in productive, co-creative discourses on architecture, building a discipline that is less focused on producing starchitecture, and more empathetic, collaborative, and socially responsible?

The Work of Creating Collaboration: Shaping Time Through Creation of a Shared Vocabulary Across Three Design Departments and Its Impact on the Development of an Interdisciplinary First Year Curriculum

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Keywords Interdisciplinary pedagogy, Foundation studio, Student-centered teaching methods

This paper comes from an existing and widely supported premise acknowledging the importance of interdisciplinary collaboration in design education. Due to collective speculation from different disciplines, interdisciplinary design education can create students who are able to analyze and respond to complex and unknown contemporary problems such as designing for climate change. The problem in one of the "unknown unknown". (Luft and Ingham)

Within this paper and presentation we seek to bridge the theory of "why", with the pragmatics of "how" to create an effective, student-centered interdisciplinary foundation design studio. Efficacy by this measure may mean students that have a foundation experience that may enhance their capacity to collaborate to work on unknown, or wicked problems later in the curriculum or in professional practice.
In 2014, interdepartmental design faculty (architecture, interior design, landscape architecture) took on the challenge of developing a joint first-year curriculum. Early curricular development and pedagogical approach was a challenge. The academic priorities found in each department often resulted in disagreement, often due to perceived impacts upon accreditation requirements within each professional faculty.

This stagnation in curriculum development resulted in the need to include each department faculty in the first year curriculum development. Each department asked a committee of faculty to draft a manifesto for the first year curriculum and list the skills and abilities of the students upon matriculation from the first year interdisciplinary studio into the respective professional programs.
Department Heads and Deans collated and created a cognitive map of the common curricular ground between the departments. The curricular framework included values, pedagogy and methods/skills. Values established a student-centered teaching method. Means of teaching included an emphasis on empathy, open-mindedness and curiosity, intersubjectivity, iteration and collaboration in process, enterprise and risk and advocacy. Throughout the first year, the teaching team focuses upon the student to bring them to understand multiple perspectives, and move past relativism to advocacy. This student-centered teaching method challenges students to develop personal and collective judgement in their design thinking and development process.

Pedagogy for this teaching team includes tethering the values from student-centered teaching to fundamental design concepts. The teaching team uses best practices to help students develop guidelines and judgment for fundamental concepts such as figure-ground, composition and color, and hierarchy. How can students come to quickly develop evaluative capacity?
Methods is about students gaining skills design grammar. How can they see, analyze, and 're-present' their ideas to gain feedback? How can they understand representation as inquiry, instead of it as required documentation? Student-centered methods enhance growth and development of students to become fluent with the methods and skills of the designer. We want them to efficiently and effectively use multiple modes of representation to discover implications of their design ideas.

In this presentation, we will include a detailed description of the collaborative curriculum-what is the overlap of skills and concepts needed from these disciplines? We will describe student-centered methods and best practices framework using student works and student surveys to illustrate efficacy from narrative and data perspectives. We hope to contribute an ongoing dialogue about the value of first-year interdisciplinary curricula.

Practicing Conscious Architectural Experience

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Keywords   Architectural Consciousness, Focused Experience, Analysis through silence and stillness

A B S T R A C T

This paper is concerned with providing a description of Conscious Architectural Experience (CAE) and outlining a procedure for engaging CAE in the design studio. It will cite specific examples, outcomes, and the benefits of incorporating CAE to encourage 'consciousness' while developing more meaningful understandings and descriptions of place.

The opening lines to the Conscious Architectural Experience assignment are as follows.

"Assume that you will waste two precious hours of your life in this assignment. In other words, drop all expectations of getting anything out of it. At the same time, since you have accepted this loss, don't get upset about it or intend to change or improve anything that has not been given or asked from you. If you get bored, anxious, angry or begin thinking about anything, just stop and return to your initial resolution; you'll just do this because you promised it and/or it is required from you, period. Surrender yourself to this process. This experience should be visceral, intuitive, natural, spontaneous, and NOT intellectual. Do not analyzing anything. Do not try to make sense or understand anything. Do not generate new ideas or solutions. Just be open to whatever is happening. Be there, that is enough."

Traditional site analysis requires measured documentation, contextual reference and environmental description; wherein the analyzer is primarily engaged in collecting and representing the physical and ecological attributes of a particular locale. In direct contrast, practicing Conscious Architectural Experience is a multi-step process for engaging and understanding place and time - and our relation to both. CAE requires the participant to fully engage in an immersive exercise that leaves the practiced traditions of analysis for another time.

Conscious Architectural Experience also requires its participants to disconnect, figuratively and literally, from their digitized and fragmented world to engage in the real. CAE emphatically denounces the notion of effective multi-tasking and professes that overstimulation and excessive distraction, particularly of the digital kind, dislocate students from their work and from developing deeper levels of understanding and their ability to articulate a particular subject matter. CAE refocuses the participant on the presence of the real, the tangible, the felt, and the unseen. CAE demands that no analysis is to be conducted during the experience – the only thing that matters is the experience itself. Yet in the process of removing all the analytics, the place reveals itself to the participant.

Architectural scholar, Julio Bermudez, defines extraordinary architectural experiences as conscious "encounters with a building or place that fundamentally alter one's normal state of being. By fundamental alteration it is meant a powerful and lasting shift in one's physical, perceptual, emotional, intellectual, and/ or spiritual appreciation of architecture."

Practicing Conscious Architectural Experience is responsive to the imperative to 'Take Time' to 'Focus on the Present' through the removal of increasing "interruptions – intentional, habitual or unexpected."

Dimensions of Time

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Keywords   Past, Experience and Beginning

A B S T R A C T

The space of Iowa has been reinvented in the nineteenth century as a reflection of the modern rationality of capital production. Communities in Iowa continuously adapt to changes in the agricultural production processes. Since its start in the nineteenth century, this production process was lead by family farmers – a form of farming in which labor is supplied primarily by family members. As an extension of this agricultural legacy, we chose our site of study based on it being a former experimental grass and grains parcel operated ca. 1891 by Iowa State University – a land grant university. The portion of this experimental ground which remains is our site of study. Our foundational studies consider its history and precedent as productive grounds as essential components of design education. It is our goal as educators to assist beginning design students in the cultivation of local knowledge specific to cultural memories and land use practices as an essential part of our studio culture. As pointed out by Gaston Bachelard:

"Among the most difficult memories, well beyond any geometry that can be drawn, we must recapture the quality of the light; then come the sweet smells that linger in the empty rooms, setting an aerial seal on each room in the house of memory."

Hence, we might consider the parcel as a room of a dimensional nature as measured by our senses rather than any empirical method. And as such, a dimension of time with which we'd enter.

In this foundational exercise, students are asked to conduct an exploration of place through the creation of visual maps, environmental intervention, small-scale and detailed tangible embodiments, and creative presentation, all the while engaging the senses. Learning Outcomes include critical thinking, visual organization, visual translation, media, ethics, communication and critical evaluation. On the first day of the project, students spend time on site and consider aspects that trigger their immediate and non-immediate attention. The students are then asked to explore these aspects by spending additional time on site together and alone and bear witness to specific sensorial conditions.

The passion to create is of an ancient and fundamental lineage. It is the embodiment of a compulsion to connect self with place. Our experience as occupants of a particular setting begins with the impulse to instantaneously scrutinize everything. This impulse is sustained through an often precisely choreographed route. Each inquiry is part of a process by which the humanity and sensual experience of a particular setting is revealed. Our efforts regarding foundational design education are directed toward elevating a student's sensory perception of a particular site through direct experience, experiment and the production of orthographic projection – plan and section drawings. This process of inquiry is the embodiment of an interdisciplinary agenda that has to do with engaging in drawing as a method of projection and perception through the assertion and embodiment of self in an effort to authenticate the bodily essence of lived space. To this end, the act of making observations assists in cultivating place-based knowledge.

Transmedial Time Constructs: Unfinished Architectural Drawings

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Keywords   Transmediality, Imagination, Time

A B S T R A C T

Representational and technological paradigm shifts offered historically a fertile ground for architectural imagination. Being on the cusp of a longue duree technological shift from analogue to digital drawing offers an opportunity for the proliferation of possible transmedial conditions. The first year undergraduate joint drawing/multimedia courses at the Azrieli School of Architecture and Urbanism, Carleton University, challenge a current understanding of drawing as instant image production, portraying mirror-likes of future buildings. This notion reduces drawing to a final short act of performance, leading to the farming of prematurely finished images of architecture. Through hand and digital transmedial drawing exercises, students experience the imaginative nature of architectural drawing as an open process rather than a close production system. Hybrid transmedial time constructs are a means to the discovery of ideas, which comprise both high and low technologies, a merging of different mediums, techniques and ideas. Drawings can be precise and imprecise, regulated and unruly.

Architecture itself is generated through a transmedial process of transforming materials into ideas that are formed and deformed in the passage from one medium to another. Changes of medium accelerate imaginative discoveries. The imaginative traction of drawing is experienced when models become contact photographs; contact photographs become drawings; drawings become buildings; buildings become survey drawings, etc. thus opening up through each change of medium opportunities to draw out the imagination. This ability can be transferred from drawings to buildings as a completed act. This happens when the drawing remains open and ambiguous, which is not to say vague, or imprecise. Only when unfinished drawings retain their ability to draw-out the imagination and facilitate multiple readings that keep the design and construction process open ended, before, during and after construction.

Blurring the distinction between drawing and model, hand and digital, architectural drawings are conceived as three-dimensional material and cultural presences engaging with multi-modal sensory perception. Beginning design students start their architectural explorations through physical models that are translated into drawings, living between hand and digital work, through a transmedial design process conducted through timely material transformations and deformations that generate opportunities for serendipitous discoveries of ideas. The exercises rely on a tension between shifting notions from hand and digital drawing that challenge the use of a singular medium, conceiving of architectural representations as transmedial time constructs over time. The theoretical and temporal gap between hybrid representations are explored and kept open. The imaginative transmedial exercises allow experiencing the depths of orthographic projections, the analog and digital realms. The layered time and space existing between representations exercises offers the imaginative lens to experience an expedient and deep architectural gaze.

Destabilizing Design Language: From Disciplinary to Autonomous Practices

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Keywords Precedent, Diversity, Experience.

A B S T R A C T
The historical precedents that outline graphic design as a verbal language – The Bauhaus, Hochshule für Gestaltung Ulm, Schule für Gestaltung Basel – still hold their lasting influence in design basics, especially as codified in design elements and principles. Terms such as point, line, plane are manipulated through their interaction and interrelation via such terms as hierarchy, direction, scale, and contrast.

Design language need not to be initially seen as universal, but rather can be constituted as conditional, provisional and highly situational, responsive – indeed responsible – to the specificities of diverse languages and cultures. Beyond the contextualizing activities of first-year graphic design studios, current efforts at OCAD U are asking students to work though the task of relativizing normative language through reflective writing, common documentary practices, and the introduction of personal narrative, language and cultural history into the studio as a space of linguistic construction and mediation.

The intent of a more granular approach to the construction of disciplinary language is to engage students in the unpacking of modernist legacies of universality, in order to situate design process in a broader territory of transdisciplinary fluidity. Efforts since the Bauhaus, Ulm and Basel to define and establish a design vocabulary, invariably add technological relevance and timeliness, but fail to account for the reality of the disciplinary mobility students face during their undergraduate careers, and beyond into contemporary practice. Any movement of design language towards greater diversification and responsiveness to shifts in language and culture might mean that attempts to codify may be in vain. The intent of first year is thus to destabilize existing precedents and pull normative language into the complex heterogeneity of meanings, beginnings and perspectives.

Perhaps what current education might benefit from is an introduction of vocabulary that asks for performances of language as part of constituting emergent definitions of design principles as they happen, or don't, in the studio. Such performance may be visual and verbal as students seek meaning that makes sense to them, their peers, and professors. For graphic design students who begin their study of the symbolic representation of language via typography in their first semester, putting all these pieces together, and/or keeping them apart for study can be a struggle. However, the efforts are located in broader institutional frameworks designed to situate design practice, and design education, in a broader, more inclusive narrative that instantiates more than modernist narratives in studio education. The place of history in the studio isn't up for debate, but which history, at what time, in what language, through what process might just start to get at the linguistic issues at hand.
Through the documentation of faculty curriculum development, a studio case study, and necessary historical and theoretical context, the project of design language development in the OCAD U Graphic Design program will be presented as an attempt to address the shortcomings of modernity in the acquisition of design language, and make space for student autonomy in the construction and definition of individual design practice.

From Musical Notation to Urban Form

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Keywords Imagination, Experiment, Context

A B S T R A C T
Art, architecture and science should be equal forms of knowledge production and understood as a cultural practice. In this light, architectural design can be rethought as a form of research and experiment, as a self-critical process between thinking and making. Beginning students learn from interdisciplinary examination of methods of artists (musicians, sculptors etc.) alternative approaches to design far from cliché. In my teaching, I employ architecture as a continued form of experimentation from the beginning, centered on the question of "why" rather than "how", where design methods are explored and developed by the students individually from their cross-disciplinary experiences.

In this presentation, I will discuss a 2nd year design studio for the 3+ Students (interdisciplinary design beginners from a non-architectural background) with the theme of a Pop Academy for Downtown Salt Lake City, UT. In a first step, students reflected upon the relationship between music (as art of time) and architecture (as art of space), the parallels as well as differences with regard to experience, representation and performance. In a second step students analyzed abstract (visual) notation – score and plans – and explored the potential translation from one discipline (music) into a spatial composition (architecture): design as knowledge production. This step initiated a process of constant reinterpretations and editing from 2d representations to models and vice versa. In a third step, students were asked to layer and overlap the building program with the urban context, which introduced another process of editing, re-interpretation and alteration.

The presentation will show the different stages between abstract notation, first spatial translations, reiterations, and also dead-ends (as result of non-alignment of the student's interpretation derived from music with the requirements of program or site), which lead to second attempts, different readings and alternative translations.
And I believe that this design approach is especially valuable for interdisciplinary beginning design student of a 3+ program, since it activates their translational capacities.

Urban Dwelling in a Nutshell; A Crash Course to Multiple Issues of Living in the City.

Author   Craig Griffen
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Thomas Jefferson University

Keywords Speed, Multitasking, Urban

A B S T R A C T
Our architecture students get their first comprehensive architecture design projects in the second year when we throw them into the deep end with a studio on urban dwelling. The vast majority of our students come from suburban settings so have little experience with issues of the city, much less the design process. To bring them up to speed quickly, the first project in the studio is geared to introduce multiple issues of residential design in the city within a short, intense 3-week project. The vehicle for exploration is the design of a row house utilizing a proscribed methodology intended to free up design thought. Students new to design often default to standard typologies of the row house; what I refer to as the "stack of pancakes in a box" approach. To break them away from this idea, they design in physical model form only, without sketching, and create space exclusively though the cutting, scoring and folding process of one sheet of corrugated cardboard. No tape or glue are allowed and the entire sheet must be used without waste. The technique results in a house designed in 3-dimensional space (not flat 2-D plans) with (optimally) a rich variety of heights and openness. The second phase of the project transforms the folded structure into a building by defining the envelope with basswood window mullions and then documents the assembly process through digital diagrams similar to origami instructions. During the process, we line up all the models into a street (nick-named Ego Avenue) to demonstrate why all buildings can't be object buildings; some must play background roles as responsible members of a social institution.

This procedure is more than solely an exercise in form-making. The limited materials and rules of the folding process are very intentional to prevent "over-design" and allow students to focus on the multiple issues an architect must consider simultaneously that affect design of an urban dwelling: legal, budgetary, construction and societal.

Zoning Codes – How do setbacks and height limits affect the design?
Building Codes – How do fire codes dictate window setbacks from adjacent property lines?
Economy of Means – What is the sustainable value in using an entire sheet of material without producing any waste by products?
Openness vs. Privacy – How do we balance the desire for openness and light in the dense city while maintaining personal privacy?
Structure vs. Envelope – How do we distinguish between skeleton and skin?
Construction Procedures – How do we graphically explain methods for assembling complex designs through clear concise drawings?
Contextual Response – (Being a Good Neighbor) – Is there an ethical value to design buildings that respect the neighborhood context by fitting in without mimicry? When is it better to check the ego for the benefit of the whole?

While none of these topics is investigated in great depth, the project quickly and succinctly introduces the students to a breadth of urban issues early in the curriculum that they will encounter in ensuing projects.

Learning to Compute in Design by Making Geometry

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Keywords Technology, Geometry, Computation

A B S T R A C T
The foremost claim of this paper is that beginning design education can be considered as an early integration of computational thinking to design education, with or without the use of computers. Studio exercises that engage students with intensive reflective thinking can underline the computable aspects of design, and can help the students understand that designing involves different forms of reasoning. In cultivating computational thinking, the abstract and timeless visual language of geometry is a fundamental component: the abstractness of geometry eases out the learning process, and helps the students to focus on the relationships that they establish between parts.

Within this framework, this paper presents a design exercise with first year design students that involves the design and making of material systems that serve as lanterns. The exercise intends to develop the visual and spatial reasoning skills of students through extensive digital and material explorations. To guide their design explorations, students are introduced to polyhedral geometry, and are encouraged to use digital design tools to support the geometric construction process. The required outcomes, besides the digital models, are full-scale material artifacts. This situates the design exploration at the intersection of the abstract and timeless world of geometry and the physical and volatile world of material things. In return, students learn to compute through making geometry.

Traceability is especially relevant in design studio environments where students are asked to communicate their acts and decisions with instructors and peers for the sake of learning how to reason in design. More than just for accountability to fellows, formalizing reasoning allows the students to have control over the design process. As part of this exercise, students designed and fabricated a set of lanterns in different sizes (40" and 20" in diameter) and created instruction manuals that visually illustrate the step-by-step rules for the assembly of parts. This corresponds to creating a relational system and it requires having control over the underlying principles of that system. The change in size also introduces a challenge for the students to make variations in geometry, materials, and connection details, while still maintaining the similarities that make a set.

The paper presents the computation-based curriculum of the first year design studio (at Istanbul Bilgi University – Faculty of Architecture) that defines the context of this exercise, and examines the process and the outcomes of the exercise in detail. The exercise presented is credited to the instructors of the 2016 Basic Design Studio at Istanbul Bilgi University - Faculty of Architecture, including Benay Gürsoy.

Design Computation With Eyes and Hands

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Keywords Computation, Shape Grammars, Programming

A B S T R A C T
For a long time, design instructors have placed emphasis on tactile approaches to learning such as hand drawn sketching, diagramming, and model building. In many cases, designers have used these techniques to separate themselves from other professions; it was the skill that gave them creative superiority over other professions. While sketching is not being removed from design education, this method of production is in desperate need of a reboot. Designers need to adopt new methods and ways of thinking if their work is to move into more robust computational systems. Using traditional analog tools we can teach students to think computationally well before their work is ever carried out on a machine. However, in many design schools, computational thinking is not yet considered a core competency in design education.

Once students of design embrace computational thinking, the jump to learning computer coding is not so severe. For many design students, the most intimidating feature of coding is the abstracted and foreign nature of programming languages and the screen environments in which we write them. Integrated development environments (IDE's) lack the visual and dynamic qualities found in most design creation software. Adobe Photoshop and Adobe Dreamweaver are worlds apart. This paper shows a scaffold approach to learning computing principles that has proven to be successful with beginning design students. The process is analog by design, and requires students to use their hands, pencils, and tracing paper to manually carry out their computations. MIT Professor Terry Knight refers to this procedure as, "slow computing."

By giving students a methodology to visualize code outside of traditional syntactical structures, it enables them to think about code structures universally in ways that are both spatial and computational. The slow nature of the nature allows them to be reflective and build deep understanding for computational systems. Students can think about code from new angles, and make mental connections with their variables and rules. Spatial and visual thinking becomes the forefront and works in parallel with computational thinking. This type of tactile and visual programming is intrinsically useful to design students who already think spatially. Computational thinking expressed through visual systems is a great way to bridge the gap between computing and design education. Traditionally, design education has not dealt with computing knowledge, and computing education has kept distance from creative aesthetics. There are many concepts found in computing education that could help expand design education and provide students with the skills necessary to be both visually artistic and analytically systematic. This research shows how we can use rules and algorithms intuitively to be aesthetically creative. To further this pedagogy, I have documented what happens when students are introduced to computing ideas through shape grammars as a scaffold approach towards learning to code. This research also gives insight into how students studying design acquire computing concepts and adopt them into their creative process. For educators, this sheds new light on how we can build algorithmic and analytical problem solving approaches into foundational art and design studies.

Digital Teaching Tools and Their Impact on Student Learning in Large Design Courses

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Keywords Technology, Beginning, Experience

A B S T R A C T
The need to effectively deliver instruction to students in large classes can be difficult. The learning environment associated with large groups often increases distractions, decreases engagement, and makes focusing on the present nearly impossible. In fact, many scholars such as Prince, Bonwell and Eison have studied how to keep students engaged when teaching to large groups.   They recommend implementing active learning approaches that utilize student-centered learning principles. The use of active, student-centered learning is already a key feature of most conventional studio pedagogy whereby learning occurs within a traditional small group studio environment. But, various shifts in higher education are starting to suggest that larger class sizes, even in design education and especially at beginning levels, may become more common in the near future. As such, there is an increasing need for taking time to experiment with and explore new instructional strategies for large-sized classes and studios in beginning design education.

The focus of design education on small-sized studios, one-on-one instruction, and desk critiques has unknowingly marginalized pedagogy tailored for large-sized classes. Simultaneously, generational differences amongst teachers and students highlights an increasing need for technology in the classroom according to the International Education Advisory Board.   This suggests that technology as a means to enhancing active learning and supporting student-centered teaching should significantly inform the development of new design pedagogy aimed at larger-class sizes in beginning design. This paper seeks to understand these issues through a case study of a freshman-level Introduction to Architecture design course with over 100 students. The course includes lecture and studio components within a blended, active learning environment. The study examines the relationship between online instruction, the live lecture period, and the large-sized studio. More specifically, the study looks at the relationship between the delivery of instruction related to design skills, principles, and professional life and the use of digital technologies including an Apple IPAD Pro, Canvas, and Morpholio Trace.

The study's central thesis is that blended, active learning environments made possible by new digital technologies address the present by taking time to understand the current design student. In doing so, teaching is adjusted to help students stay in time and within the learning moment. The study uses three research methods to collect data including observation, interviews, and surveys. Early study results suggest that the technologies tested in the case study are effective at helping students become active participants in their own learning. Additionally, the study indicates that the blended learning environment is more efficient in delivering coursework and more effective in generating meaning, relevance, and concept retention. Finally, the study's findings suggest that blended, active learning environments are more convenient because new digital technologies are closely aligned with students' experiences and interests than older, more traditional methods of providing design instruction. The paper expounds on these results and includes pedagogical guidelines for design educators wanting to learn more about how to create blended, active learning environments that use technology to enhance engagement and learning in large-sized design courses.

A Sense of Place in Time: How-to for the Beginning Design Student

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Keywords Urban, Experience, Imagination

A B S T R A C T

Buildings are bound to place, so one must intimately know the place for which he or she is designing. This concept of linking place and time to architecture is fittingly well-explored in design education; however, given the complexity and changing nature of the city, it may be difficult for the beginning design student to "get in touch with" or identify a sense of place at a given point in time. A city contains more than any inhabitant can know, but the unique identity of a city is knowable through immersion and study.

This paper establishes a process by which beginning design students can better understand the identity of a place. This process can be divided into three phases: (1) Observe (2) Transcribe (3) Weave.

Observe: During the observation phase, students will walk to diverse locations within the fuzzy boundaries of a place. Unknowingly, the observation phase begins on the sidewalk as student walks to each location; mindfully engaging the senses is crucial at each location and the in-between.

Transcribe: At each location, students should internally assess and write out their answers the following subjective questions:
• What do I See? e.g. materiality, form, scale, features, patterns, volumes
• What do I Hear? e.g. natural sounds, mechanical clicking, chatter of people, footsteps
• How do I Feel? e.g. initial emotions, excited, oppressed, warm, cold, gaudy
• What am I Learning? e.g. history, interesting facts or legends, programming information
• What Inspired me? e.g. what elements can be incorporated into a new design

Weave: Visits to a variety of diverse locations will help ensure an accurate sense of place in time has been established because the whole place is constituted from the interaction between the parts. As Matt Carmona explains in his text, Public Places, Urban Spaces, though particular parts or elements may be highly influential, a sense of place is a creation of the area as a whole rather than any specific part or element. The sense of place exists in the combination of those parts or elements.

The paper concludes with a case study of this process in use within the design studio of a pre-architecture program. The city in which the architecture program is located is experi-

encing a fashionable, revitalized shift in its identity. In the past, the city's downtown core was perceived as unwelcoming, even bare. Because of the gradual shift in downtown's identity, this area provides an ideal testing ground for the proposed process for beginning design students.

Relevance to TIME: Over time, cities tend to transform, so the identity of place is likely to change consequently. This establishes the paper's relevance to TIME; the process by which beginning design students can better understand the identity of a place is closely tied to the time in which the assessment is performed.

Developing an Agile Design Curriculum from an Ivory Tower

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Keyword   Curriculum, Faculty Research, Active Student Participation

A B S T R A C T

The skills required for an entry level designer are evolving at a rapid pace and at the same time the research expectation of faculty is growing. With more PhD's working towards tenure art and design must solidify its place in the academy. Currently, it can take up to five years to put into place a new curriculum and, it it's not written well, it can be obsolete before it's even taught. This is a curricular structure that is designed to address each of those issues. The curriculum is initially made up of basic skills instruction and will lead to into core classes that will generate portfolio ready projects while incorporating a number of 1.5 hour offerings that follow a set of approved categories but are flexible enough to work with the realities of higher education.

A three credit-hour studio classes can meet as much as 5 hours a week, while academic classes are half of that. The time expectation for faculty limits research and students have difficulty meeting the requirements of a minor or fitting in electives. By exploring lecture\lab and lecture\lab\recitation models that allow a class structure that don't expect a student the stand in front of an easel for the bulk of the day or simply complete sketch after sketch in class in-class time can be better used for lectures and work (especially on the computer) can be completed by students outside of the lecture. Borrowing from models already in place in academia also will allow alignment with the broader educational composition.
These accessory classes (1.5 hour credits) are unique in that they will allow students to choose from a number of options. This will allow individual students to enhance a specific interest and encourage them to take more proactive xxx in the education they receive. Another important structural component is to allow students to take classes outside their cohort groups (for example, juniors and seniors might be together) thus breaking up the cliquishness that can develop when a set group takes classes together through successive years. Accessory classes can also serve faculty research agendas allowing a small part of a project to be brought into an undergraduate class. Availability of unique adjuncts, co-teaching opportunities, and an exploration of current trends in materials or software can be explored without the prep required of a full class.

This paper will present models that that are designed to put the curriculum into place in a way that is self-sustaining while clearly communicating the structure for internal approval (university or college wide) while communication with national accreditation bodies.

Whither the Sketched Flashcard? Studying Architectural Precedents in Our Digital Age

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Keywords Precedent, History, Technology

A B S T R A C T

A generation ago, an emergent architecture student learning history would find themselves frequenting a library study room full of printed images. Lining the walls and organized by class section, these would be dutifully sketched, sometimes on notecards for flashcards, and often accompanied by notations and personal mnemonic devices. With time short due to limited library hours, the student would rush, planning to return frequently to solidify their visual literacy in preparation for the "building/site recognition" tests that lay ahead. Today, this scenario, with its place specificity and focus on rigorous, quick memorization, has been replaced by a proliferation of online images and flashcard tools, including Quizlet, StudyBlue, StudyStack, etc. No longer limited by library hours or sketching ability, the contemporary student seemingly has no barriers to leveraging the past. In practice, however, the picture is more mixed. Reliance on the instant gratification of the internet has both broadened, by positively opening up new areas

for exploration, and narrowed, by removing the push for students to own the materials through repetition and consolidation, the way that visual materials are engaged with and recalled by the beginning architecture student.

With these tensions in mind, this paper explores how new virtual instructional technologies can democratize architectural education through standardization and unprecedented contact with spaces, places, and ideas previously inaccessible, all while encouraging student accountability. From "flipping the classroom" pedagogical strategies to "synchronous" online sessions to instructor-curated digital flashcards or audio sound bites, the time that students spend engaging with course materials no longer follows the traditional model of presentation (in-class) and review (out-of-class). When offered as a set of complementary learning tools suited to a myriad of information retention techniques, these new technologies can benefit the beginning student immeasurably. This is particularly true when time management skills and personalized study strategies are emphasized. While many of the gifts of digital technologies are highlighted here, the paper also looks at what might be lost in this digital turn in the study of architectural history, what it means to be constantly mediated, and how we can minimize the negative impacts of these changes.

Affect Theory as Methodology for Design

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A B S T R A C T

   Third Rule: State problems and solve them in terms of time rather than space.
   – Gilles Deleuze

The recent turn to affect theory (which is primarily derived from the work of Gilles Deleuze and Félix Guattari) in multiple disciplines brings to the surface alternative ways of thinking about "problems"

and their "solutions." Theories of affect, we propose, expand research beyond positivist, quantitative, singular viewpoints to include the multiplicity of lived contextual experience as the taking off point for research lines of flight, not only impacting research methods, but importantly, the formulation of design questions/ problems themselves. Following the theme of this conference, we focus on how theories of affect are particularly valuable in reconceiving and reimagining the "slownesses and speeds" (see Deleuze, Difference and Repetition) of time. While we believe theories of affect cannot be reduced to singular methodologies we claim they do serve to provide methods of creative practice allowing for examinations, explorations, and evocations of time as an element of design. In our presentation we will introduce the complexities of affect theories and particularly the ways in which theorists consider affect, art, and design. Next we will take participants through a lived experience of introducing the potential productive and generative intersections of design and affect theory.

This topic address time from a Deleuzian point of view. Gilles Deleuze's philosophy of time has been applied to many fields. This paper will turn to Deleuzian ideas to address design. Specifically, we will examine how overcoming the binary of problem/solution becomes a key methodology for design education simultaneously becoming familiar with the idea of affect (affect theory).

The Hot/Wet - Hot/Dry studio: Investigations in Contrast, Context, and Construction

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A B S T R A C T

Objective:
The objective of this paper is to present a pedagogy which focuses the present into a larger social, cultural, and built context as a means to investigate and respond to unique geographic and environmental conditions. Contrasting climatic locations as a generative strategy in the design process is intrinsic to the teaching pedagogy.

Method:
The framework for this inquiry is an architecture studio focused around hot/wet and hot/dry regional sites. The studio is composed of two projects, one sited in the hot/wet marsh of Southern Louisiana and the other sited in the hot/dry desert of Marfa Texas. Both sites are located at 30 degrees latitude and span a distance from 90 to 105 degrees longitude. This

distance is traversed over a submersive field excursion that juxtaposes the two sites and their unique contextual parameters.

Project one develops an immersive structure intended to engage researchers in the hot/wet marsh landscape through a distinct procession to promote an expansive experience of the environment and its qualities. The structure is required to be elevated to provide a vantage over the marsh and to protect against storm surge. The site is explored by boat, allowing students to physically partake in the environmental experience through observational documentation. These qualities exist throughout the project as generative techniques guiding the organizational strategies of the light tectonic assemblages of each proposed structure hovering above the landscape.
Project two develops a work/live structure that gathers a group of multidisciplinary artists united around developing large scale projects in the hot/dry Marfa desert. The structure is required to be fifty percent stereotomic construction to strengthen the connection with the ground. The site is introduced by walking out over the desert where students tangibly engage the environment by sketching and photographing the contextual qualities. Expanding on the nature of the site, design proposals are developed utilizing heavy stereotomic assemblages that allow each structure to be embedded in the landscape.

Result:
The results are two distinct projects each focused on a unique set of contextual parameters that guide material, structural, and construction decisions. The models for project one are constructed of stick frame components with a direct measured and proportional relationship to actual standardized dimensional lumber. The components are connected, joined, and assembled with mechanical fasteners absent of traditional modeling glues. The drawings for project two focus on the sectional condition of the site in relation to the stacked and/or poured materiality of the structure. The assemblages illustrate an understanding of building within the earth and address the logic of structural forces.

Conclusion:
Through the engagement with juxtaposed project sites of similar yet contrasting environmental conditions students have a framework from which they can understand and then apply contextual parameters as generative strategies. The process of developing architectural proposals is infused with the conditions of the present allowing students to focus on the distinct qualities of each project site.

Future Cities: A (Non)Humanist Approach

Panelist Zaneta Hong
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              University of Virginia (reporting on coordinating the undergraduate
              core architecture program at Harvard University, Graduate School of Design)

A B S T R A C T

Cities are points of exchange, economy, and production – they are shaped by advances in emerging and innovative technologies and they are altered by the gravity of political, socioeconomic, and environmental events and measures. Cities are not devoid of human and non-human influences, rather they are highly impacted by them; and over time, these influences have generated new spatial paradigms that have both augmented and deconstructed previously established relationships and perspectives. Through this particular understanding of the city, we – as spatial designers, whether architects, landscape architects, and/or urbanists – have come to realize that the choices we make have tremendous effect on the future of cities and its citizens, in as much, the distant, seemingly unrelated systems that provide the framework for their formations and perpetuation.

It is from this proposition that an undergraduate Architectural Studies track at the Harvard University Graduate School of Design began. As a newly formed undergraduate program, an opportunity to rethink the pedagogical foundation of a beginning design education – as one that examined both the history and future of spatial practices – presented itself as both timely and projective. In particular, students in the program examined the city through the lens of non-human agents, in order to move from an understanding and description of urban conditions as individual embodied experiences to one where the decentralization of the human body and human experience repositioned the city as a more complex and intertwined assemblage.

The first of a two-studio sequence, Transformations, focused on extracting the metrics, logic, and operations of an "urban agent" as a way of revealing relationships inaccessible to humans. Students used this opportunity to step out of their own anthropocentric understandings of the systems and environments that surround us, and prepared a knowledge base of the interactions, correspondences, and continuities that transform the city. Experiencing the perspectives of these urban agents, exposed the city including its cultural identity, socioeconomic patterns, built infrastructure, etc. in unforeseen ways.

The second studio, Connections expanded upon the urban agents by examining them as dynamic conditions generated as byproducts between human and non-human frameworks. Students investigated these relationships through qualities, behaviors, and territories, where each urban agent revealed latent, suppressed, provisional, and otherwise unmapped connections, which influenced the organization of infrastructure and material ecologies.

Both studios positioned design at an intersection of speculation, realization, and affect. What manifested were not only materialized constructs for human occupation but temporal and responsive processes that shaped human action and experience. This paper expands upon a (non) humanist mode of design inquiry, and provides insights on how the city and issues of pre-disposition, marginalization, and discrimination can affect the ways in which research, design, and other modes of intervention are enacted; how site and site conditions are interpreted; and consequently, how the advent of future cities are speculated upon.

Teaching Adaptability and Integration: Kinetic Architectural Prototypes

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Keywords Technology, Adaptability, Skills

A B S T R A C T
Open source development frameworks have revolutionized the way designers of all disciplines develop software, hardware, carry out research, and even fund projects. Led by the "Maker Movement" and made possible by open source hardware and software, these readily available and non-proprietary rapid-prototyping technologies substantially lower the barrier of entry to the research and 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. For the aspiring design student, these unfamiliar topics can be significant hurdles to entering this fertile ground of design exploration. This paper serves up for comparison two separate approaches taken in course offerings that engage these issues, one in a research seminar context, one in a design studio/workshop context.

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.

Specific issues were identified both in the subject matter as well as advantages/disadvantages in course delivery structure. Students struggled with issues of scale in terms of projecting and adapting their prototypes to architectural assemblies at full scale, specifically the tectonic as well as mechanical and material implications of scaling up. Another primary learning experience was the realization that substantial iterative testing and prototyping needs to be an integral part of the development process. 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. Substantial time was spent dealing with mechanical issues of tolerance and friction, as well as developing control logics and linking electronic components in relation to one another.

Regarding the educational experience, 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 version of the relationship has more to do with issues of precision, experimentation and verification through iteration, while dealing with "real" mechanical and electronical materials in an alternate 1:1 sense. The overall pedagogical goal is to instill within students a "Maker" mentality of making things work on a technical level all the while maintaining criticality from a design viewpoint. 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.

Slow, Open and Imperfect

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Keywords Present, Focus, Diversity

A B S T R A C T
Accustomed to a speedy, prescriptive, and pervasive world, we believe that our architecture students need to be rooted firmly in the present. Though entering architecture with enormous diversity and distraction of every sort, it is critical to create a foundational platform of skills, concepts, and vocabulary so that we may communicate. We believe in a hands-on environment of "making" and engaging. We work to slow down, keep students in the tactile present, allow them to absorb experiences and ideas, study what they observe, and consider the human body in its immediate context. Studying historical times, structures, sites, and customs, allows students to suspend personal expectations and familiar outcomes and immerse themselves in more critical inquiry.   At this juncture, where we have facilitated a sort of unified reset, we are able to engage in collaborative creative work that celebrates and utilizes the diversity of ideas, work, and individuals.

We value an environment that is free of personal distractions and yet has a heartbeat of its own that pulses with people, productivity, relationships, dialogue, work, and music. We take time out from longer, committed workdays to collectively view the work and reflect. By building intimacy and connections, as well as sharing successes, we achieve a collective attentiveness that strengthens the work overall. By creating a team, we can work and pull together. The collective work develops to an extent that it is actually built in the larger public domain, where it may continue to pose questions to an even larger group over time, in the future.

We have developed a freshman comprehensive studio experience that allows students to take a project from inception to full-scale build. They evolve from considering the connection of materials, to creating a system, and finally to making space. 10 projects move forward and are built at full scale in the public domain. In the spring, students work in groups which function much like small offices. Working collaboratively allows us to push the technical abilities of the students to new levels, including refined levels of craft, further development of architectural details, and comprehensive construction and presentation documentation.

Throughout the year, the architectural problem remains simple and direct, yet allows us to introduce complex architectural ideas of scale, proportion, joinery, materiality, craft, and complexity over time.   Students enter with little belief that they can shape anything, and by the end, learn that they can shape the future through imagining, questioning, experimenting, working, sharing, listening, and collaborating.

Our students shift into accepting the idea of an imperfect design process where they engage in a practice of inquiry, experimentation, and rigor instead of assuming a preconceived outcome. The idea of being slow, open and imperfect in design practice is fundamental to the pedagogy we design. The projects that we develop require students to leave their familiar experience and entice them to embrace these ideas in their work.   In this way, they are prepared to meet uncertain challenges in the future with their emerging creative practice.

Paintings for the Visually Impaired

Author   John Humphries

Keywords Experience, Adaptability, Return

A B S T R A C T
Much understanding of our world comes from top-down thinking. Identifying an object or situation, naming, then placing the thing in a category. In abstract painting, elements are included not as visual reproductions of objects, but as references or clues to how we conceptualize objects. In describing the world they see, abstract artists not only dismantle and nullify some of the premises on which bottom-up processing is based. We scan an abstract painting for links between line segments, for recognizable contours and objects, in the most fragmented works our efforts are thwarted.

Most art is for the sighted. The visually impaired do not have access to much art. Experiments prior to this work have resulted in clumsy solutions. This leaves behind the whole possibility of working in abstraction and leaves the visually impaired out. One could argue they are cut off from a way of thinking..

This project uses the fundamental skills of observation, design, color theory, drawing and digital transformation to enable students to produce objects which can be perceived to be

something more than a three dimensional representation of the objects within a painting. In the examples presented, paintings are separated into different colors (reds, greens, purples, pinks, etc.). Each color is assigned its own texture (course, lumpy, striated, smooth, etc.). Each texture is cut, in turn, into a surface. While this is fundamentally digitally carving a material, it is the assignment and gradient of each texture which is key to the project. The access to visual abstraction occurs when one texture happens to intersect of coincide with another texture. For example, if reds are assigned a lumpy texture and blues are assigned a striated texture, when a person touches the object and feels both textures there is a sensation conceptually analogous to feeling purple.

Typographic Diversity in Early-Year Typography Studios

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Keywords Diversity, History, Individuality

Clarification of relevance to conference theme of TIME:
This paper considers the value in the classroom of the formative cultural experiences of diverse students, at a time when the world is become more culturally and linguistically diverse due to the increasing mobility of cultures and people with different histories, languages, and writing systems.

ABSTRACT
The teaching traditions of graphic design in North America are largely based on European traditions. In most typography classes we focus on the history and recent and current practice of the modern Western roman alphabet in the Western environment. This may have the effect of reinforcing a Eurocentric view of visual communication, and diminishing the importance of other cultures' relationship with it.

Western frameworks are becoming less undisputedly dominant in world culture. Other parts of the world are culturally and economically ascendant. International students, many of whom grew up with writing systems other than that of the Roman alphabet, form an increasing part of the first-year student body in the school in which I teach. For many of them, typography classes are those in which they feel most at a disadvantage.

Although the Roman evolution of the alphabet remains dominant in much of the world, there are many students who come from traditions with other writing systems and alphabets that have both advantages and disadvantages compared to the Roman alphabet, both intrinsically, and in their abilities to represent different languages. These students' knowledge can enrich the first year experience for all students. The Chinese ideographic system gives insight into how writing can communicate to some degree independently of spoken language. A familiarity with abjads, abugidas, and syllabaries helps give insight into alphabetic systems and how they represent language. In the studio, these topics can also be a gateway to reflections on Western European visual hegemony.

Invented and designed scripts, such as those of Korea and the Cherokee syllabary and other scripts devised to write indigenous languages also invite students to be open-minded in their approach to typographic structures and practice.

Graphic design teachers do often try to include other script traditions in the early years. However, they risk insensitivity or oversimplification or parody, as they focus on the visual form, ignoring underlying cultures, and largely avoiding the functional similarities and differences, as well as sometimes ignoring the expertise available in their own classes.

This paper considers the practices of using non-Roman writing systems as examples of different ways of communicating language visually, and of including students with diverse backgrounds as class leaders in considering the formal and functional attributes of scripts of which they are often expert users. This practice has three principal aims. The first is to foster appreciation and recognition of, and respect for, the affordances and characteristics of non-Roman scripts, the second is to encourage experimentation with how language can be visually represented, and the third is to promote a more inclusive environment for the growing number of beginning students who, while they may be at a disadvantage in the use of the Roman system or the English language, have the opportunity to bring a knowledge and critical appreciation of the forms and functions of other writing systems to their fellow students, and gain confidence in bringing their own individual backgrounds, abilities and understanding into their design school experience.

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Design Students Consider Space Solutions for Adults with Autism

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Keywords Community, Chaos, Finite

In April of 2016 staff from the Rehabilitation Research and Training Center, and the Gerontology Department approached the Department of Interior Design with a great opportunity to apply for a community engagement grant through our institution: To engage design students in developing ideas for spaces for adults with autism. As we organized our ideas and received the grant we knew we had great chance to involve our design students in a project that could inform and inspire them on many different levels while at school and for years to come. The goal of the project is to essentially research and test ideas on space development for adults with autism while connecting our students to a local community adult care center for adults with disabilities. Autism is a lifelong neurodevelopmental disorder; however, the developmental trajectory as adults with autism age is not well understood. With the rise in recognition of the disorder, adult outcomes have become an increasing priority for this population. Through our partnership we have begun to develop a course of research that identifies best design practices supporting the needs of aging adults with autism, while optimizing their quality of life that includes client engagement, independence, and leisure skills. The development of such spaces would ultimately be reducing client stress. We are interested in the research and development of best methods for the design of facilities that respond to the specific needs of adults with autism. Through the process of testing and engagement while using built structures, we anticipate to better understand how to create spaces that facilitate and promote a stimulating and optimal environment for adults with autism. As educators in the design field this was a great opportunity to expose our student population to working with the community and specifically with a group that most would not have experienced in the past. As we looked at the process we had to understand the finite resources and time that was available to us when we involved our students in this project. Both graduate and undergraduate students were asked to participate. Our greater academic goal – to expose the students to research, real client interaction, a program that provides chances for creativity, and the uncertainty of designing for a group with many singular needs. Furthermore we looked at this as a chance to expose our students to a project that would inspire them to connect with the community and provide them with the drive and energy to further engage in such activities past their time in academia.

Double Exposure: Aligning the Academy and the Profession Through Collaborative Internship

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Keywords Practice, Futures, Demands

ABSTRACT
The National Council of Architectural Registration Boards (NCARB) has intentionally established the Architectural Experience Program (AXP) as a continuation of the holistic 'Beginning Design' experience of pursuing a first professional degree in architecture. However, the skills demanded by the profession during AXP are drastically shifted in foci from those provided by the academy, generating inopportune disparity rather than transition. As the skills required for creating architecture continue to broaden and deepen, integrating professional experience into architectural education will be increasingly necessary. The focused and strategic combination of academic and professional experience has the potential to address this misalignment and create graduates that are more adaptable and broadly capable than through academic experience alone. Professional Practice courses become an obvious venue for discussing and exploring new opportunities for alignment between the architectural academy and the profession.

Although a distinct majority of students surveyed in the two Professional Practice courses in NAAB accredited programs under consideration here, wish to have their own office eventually, virtually none have any formal training in any aspect of business – accounting, finance, human resources, strategic planning, marketing, etc. This deficiency is compounded by declining communication skills, especially regarding writing and public speaking. In response, the profession exerts pressure on the academy to provide better-trained, more proficient graduates, but the limitations of architectural curricula (particularly at state universities) and corresponding accreditation requirements ensure that no such courses in business skills will become a required aspect of architectural education.

However, pressure from the profession to include such coursework is minor in comparison to the demand for improved technological training. Seen in this paper as both a problem and an opportunity, technology's rapidly changing nature ensures constant attention. While the academy prefers to explore technological innovation, the profession strives to maintain technological relevancy and proficiency. Among the most prominent professional skills in demand is competency in Building Information Modeling (BIM), the leading production software in use by practicing architects. Students are keenly aware that they will need to be proficient in BIM to be employable, a need the academy increasingly recognizes and accommodates. While better training in BIM does translate into better prospects for employment and early success, this approach risks deepening students' skills within the silo of Basic Services, and risks allowing digital tools to also control design decisions.

The Professional Practice courses compared and contrasted in this paper entry address and resist this deepening by offering focused, project-based assignments that consider areas of practice outside of production; areas of practice that are unfortunately overlooked as opportunities for advancement. Building on the richer understanding of practice developed through these project foci, internships can then offer exposure to the highly varied processes involved in firm operation and provide highly valuable AXP credit towards licensure. Rather than reinforcing a relatively narrow set of skills, collaboratively developed professional practice coursework and structured internships foster greater alignment between the academy and the profession, and in turn, build new areas of significant prospect for beginning design students.

"Pinstagrammed! Internet as Muse"

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Keywords Imagination, Media, Future

A B S T R A C T

When considering the relationship of time in architecture, there has been considerable discussion on the impact of technology in the design and fabrication of buildings. This paper focuses specifically on the role that the Internet has had on architecture and its effects on beginning design education. The use of the Internet as inspiration in the architectural design process has been particularly influential for its image-based search. Web sites such as Pinterest and Instagram offer up a graphic buffet of images, which have elevated the status of representation in architecture to new heights. In academia, some have embraced the proliferation of architectural image sharing as representing an evolution of the field that enables new dialogues to take place. While others criticize recent web-focused movements such as Neo-Postmodernism as shifting architecture into a typological study that focuses on representation more than the design of buildings.

The debate of representation in architecture has been going on long before the introduction of the Internet and was especially lively during the first wave of postmodernism. In "Translations from Drawing to Building," Robin Evans reflected on the "vaunted status of architectural drawings" as "redefining their representational role as similar to [art]… being less concerned with their relation to what they represent than with their own constitution." What is the role of drawings in architecture? Is it to assist in the design process, to convey a vision of speculative environments, to aid in the construction of buildings, or as cultural critique? Can drawings compete between both the "abstract" and the "corporeal" aspects? Or, have architectural drawings finally detached themselves from the design of buildings?

The question of representation mirrors the image-based architecture critique posed by scholars such as Juhani Pallasmaa who contends that the proliferation of the visual image of buildings represents a trend of ocular bias that negates other sensorial aspects. Architecture schools are mirroring the profession, as they tend to focus on more computer work during the design process, representation skill building, and digital fabrication of models. However, the final product is often becoming more distant from professional practice in both design and representation. While this could be linked to pedagogy at particular schools, with the speed of the Internet new styles are making their way into student's projects across the country and around the world.

In the age of Internet image posting and sharing, are students just copying recent design trends or are they taking part in a movement that reflects the changing nature of architecture? At the University of Illinois at Chicago, a school that has embraced the use of the Internet and the effects it has on the changing landscape of visual media and the representation of buildings, one student describes their work as "making architecture specifically to be posted on Instagram." What does it mean for architecture and beginning design education to focus on the computer screen as the medium for design and representation? What are the benefits and pitfalls of the Internet image in driving architectural discourse?

Entangles Places, Withdrawn Objects

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"…real objects exist inside other real objects. "Space" and "Environments" are ways in which objects sensually relate to other objects in their vicinity… An object withdraws from access. This means that its own parts can't access it. Since the object's parts can't fully express the object, the object is not reducible to its parts… An object can't be reduced to its "whole" either. The whole is not greater than the sum of parts"
Timothy Morton; "Realist Magic; Objects, Ontology, Causality

A B S T R A C T

Graham Harman also suggests we can only know the world through our interactions with it. The real part of objects and things withdraws from us and we need to look for indirect, oblique ways to glimpse it.

The interests explored in this paper are two-fold.
1. To explore place as an entity, hyperobject, embedded with multiplicity of dimensions and meanings.

2. To investigate the relationship between slow and creative making and one's connection with the surrounding world, focusing the present.

I will use two series of projects - one developed for beginning design studios and the other conceived as part of my creative and research work. Both projects inform each other, in both making is conceived as a response to the world, and oblique extension of it. We attempt to get a glimpse of the undefinable "withdrawn smooth space".

Pattern of Place
At the beginning of the semester the freshmen students draw a 1000' line (extended site) on the map delineating the system of creeks and streams in our town. After the initial set of studies, they settle on a specific spot and observe patterns present there. They consider them as manifestations of extended systems of forces that manifest locally on their site. The students record these forces directly on the site. They get as close to the heart of the site as possible. They study the recordings and they extract the pattern of each element. The students "reconstruct" and examine the space that has been created among its different element this is the "smooth space" of the place. They create large "slow", contemplative drawings.

Place, Layers and Felted Thing
In the second project, I am using felt as a slow medium which allows me to draw from the place, examine it's "placesness" and learn how to dwell in it. Using local wool, materials , and plant dyes, all embedded with physical and virtual qualities of the place allows for the felted pieces to be of the place (physical and virtual) rather than its representations.

"Felt, they say, is an antifabric "It implies no separation of threads, no intertwining, only an entanglement of fibers." (Deleuze and Guattari) The ground of smooth space, likewise, is comprised of the entangled trajectories…. no predetermined direction but responding at every turn to the conditions of the moment and the possibilities they afford to carry on."
Tim Ingold; "The Shape of the Land"

In both cases by using various mediums of representation we examine qualities and relationships to see them anew.

Connecting Urban Design Student Learning With the Past

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Keywords Past, History, Suburban

A B S T R A C T

This paper will connect the experience of the beginning urban design student with the traditionally non-design setting of urban history and theory. Time is central in history, and in design. While shaping key elements in any urban designer's toolkit, history and theory courses are not usually taught in a studio setting, and usually don't light up the visual skills that other courses may have. The contemplative nature of history and theory courses can hence create a perceived disconnect between 'theory' and 'practice', and 'lecture' and 'studio' – often undeservedly.

This paper discusses how visual methods can be combined with urban design history and theory pedagogy to connect the abstract past with the visual present. The two case studies presented in this paper engage students in visualization projects of historical and theoretical research, convincing them that pasts and paradigms strongly influence their everyday and future environments. By mapping and studying streetcar suburbs throughout the United States, students learn about a glorious era in American suburbia that still inspires Transit Oriented Development today. The course outcomes enable the comparative study of various regional, temporal and technological contexts of the American suburb, visualizing the transformation of an urban landscape that many students take for granted. Another example is the study of various eras of urban design theory by analyzing their consequential districts in the city of Cincinnati, a treasure trove of each landmark movement of American urbanism. Students are challenged to not just envision an urban future through the language of mapping, collage imagery and three-dimensional modeling, but also to analyze the past. The bridging of theory, practice, past, and present can further integrate history and theory pedagogically into the growing field of urban design education. Furthermore, the visual language of urban morphology helps students and researchers alike compare the results

Four Centuries Across Four Weeks for One Book

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Keywords History, Media, Speed

A B S T R A C T
In western societies, before the start of formal architectural education in the 19th century, young affluent people pursuing a liberal arts education did so primarily through travel. Education and the knowledge of other cultures was focused on the study of painting, sculpture, archeology and architecture. The idea of the "Grand Tour" was invented by Inigo Jones, a Welsh architect and traveler. The Tour followed a carefully crafted educational agenda. As a part of this agenda students were expected to document important cultural artifacts and monuments. Since its inception, this method of study has asked a seemingly innocuous question: what do we bring back and how do we bring it back? The notion of the Grand Tour continues to be critically tied to chronicling the passage of time and its effects on contemporary design education.

This paper is a reflection on the methods of study used in Cities on the Water, an intensive four week study abroad program based in Montevideo, Uruguay. The aim of the program is to study four centuries of architecture and urbanism in four weeks. There are two types of strategies used to accomplish this goal: 1. Fast and Frequent, 2. Slow and Infrequent. Each strategy deals with time differently and places specific expectations on students' work. The daily use of sketchbooks and the online documentation of daily activities are fast and frequent. The sketchbook is a personal space filled with students' drawings and writings. Online documentation happens on a public website through which students and faculty share their experiences. The frequency and speed of the website is connected to the slowness of the second method of collective reflection, the making of a travel book. The design and organization of the book is analogous to the structure of the study abroad program. The documentation of students' experiences happens at the intersection among the sketchbook, the website's speed and the slowness of the travel book.

Montevideo, Uruguay is intrinsically tied to El Río de la Plata and its adjacency to the Atlantic Ocean. As an important historical port of entry into South America for European immigrants and slaves, Montevideo's urbanism is shaped by its colonial and modernist past. This history is implied by the colonial tone of the question asked in the first paragraph of this abstract. The effects of this question are most evident in the study of public spaces (Plazas), the water's edge (La Rambla), and unique material practices (Eladio Dieste). The design of the Cities on the Water travel book is based on these three categories. Students explore these categories through reading, writing, drawing, and photographing. These methods are the means used to answer the question, what do we bring back and how do we bring it back? This question is an essential way of linking the production of memory to the rigorous study of place. In Cities on the Water, this production of memory is based on the documentation of a non-linear history through the making of one book.

Design Instrumentation in an Immersive Virtual Environment

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Keywords Technology, Media, Future

A B S T R A C T
Design representation and visualization are continually being reshaped by technology. Thanks in large part to the video game industry, Virtual Reality and Interactive Environments have become more accessible than ever before. At the same time, broad consumer exposure has been made possible by technical advancements that put Virtual Reality graphics on par with that of conventional video presentations. Much has been written about Virtual Reality insofar as its use as visualization tool, however there has been little research into the use of Virtual Reality as a design environment. This research examines the integration of Immersive Virtual Environments (IVE) in an architectural design workflow. Of particular interest to this research is the use of relatively inexpensive and commercially available Head Mounted Displays and controllers, paired with existing software, to test a design environment where sketching, modeling, and collaboration occur simultaneously in a 3D workspace.

From a pedagogical perspective there are several areas to consider with regard to designing within an immersive environment. Perhaps the most obvious difference is with regard to instrumentation. We see a shift, from the pencil and paper or computer's mouse and flat screen display, to hand-held controllers or motion-detected gestural movements to create drawings and models. In order to measure conventional instrumentation against IVE, a study is conducted whereby drawings and models created by the same users are compared in both conditions.

Another impact of IVE is that orientation shifts from representing 3D space in a 2D environment (paper, the computer screen) to an actual volume of physical space as a work area, changing the characteristics of the workspace where making occurs. As a result, users intuitively draw around their bodies and in a larger physical space. Therefore, they often design themselves inside their models rather than designing at the scale of a hand-held object. Being able to physically move through their designs, as they are created, means a different spatial perception. Similarly, a result of the gestural commands and intuitive control, there is a close relationship with virtual objects and the tools used to create them.

There are also implications with regard to design analysis. For example, it is possible to engage haptic feedback with regard to materiality, texture, shape, and other descriptors. By combining physical mockups with a virtual environment, a study is conducted to determine the impact of incorporating material feedback in a digital environment.

With IVE, design analysis in the form of 3D spatial diagrams can be physically engaged. Interactive control can be used to provide feedback and uncover multiple layers of information in one setting. In order to test graphic communication, a study is conducted that compares analytic diagrams as 2D representation with interactive IVE representation.

Evidence from these studies and student interviews indicate that IVE have potential benefits as a teaching tool and an emerging design instrument, however more human subject testing is necessary to determine it efficacy. Future research aims to explore design workflows in more depth, particularly where limitations may push design work back to a traditional computer interface.

Tactile Focus: The Reciprocality of Painting and Architecture

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A B S T R A C T
Abstract painting, more so than its "picture as window" counterparts, has the binary ability to both summon and refuse the illusion of depth. Paint, with its varying viscosities and opacities, is the perfect tool for picturing the physical realities of line, plane, volume, and texture while also inviting consideration of negative, recessive, and atmospheric space. Handling paint requires a student to be attentive and responsive to a variety of relationships as the process unfurls, all the while promoting technical facility, slowness, and deliberateness in real time. Rigorous reflection on formal decisions invite conceptual inquiry into this generative process that lacks the luxury and ease of an "Undo" command. Every passage of an abstract painting requires equal consideration in order to facilitate the interplay of figure/ground reversals, resonant with architectural forms and spatial experiences.

This paper will discuss an interdisciplinary studio elective that uses the idiom of abstract painting as a vehicle for analyzing, distilling, and exploring spatial design. The confines of a painting prove to be fertile ground for structuring and composing spatial depth, or the illusion thereof. In this course, students grappled with the visual push and pull of value, color, and figure/ground relationships in a manner congruent to the making of an architectural plan, section, or elevation—without the scaleless allure of a computer screen. Students are required to be ever-present in the process of painting as the tactile and fluid medium demands undivided attention and constant revision.

To study spatial design through painting, lessons rooted in color theory (often omitted in contemporary architecture curricula in deference to ever-expanding digital instruction) are key components of a vast and sophisticated skill set. Using Rowe and Slutzky's seminal article Literal and Phenomenal Transparency as a springboard for unraveling the interdependency between space and form, students analyzed works of art and architecture by delaminating layers of perceptual depth. Processing value and color play becomes an important variable in these exercises, as the spatial behavior of color can either quicken or deter a spatial understanding.

In the analysis of precedent architecture, canonical paintings, and the work of their own hands, students are encouraged to consider form, color, and organization as primary contributors to creating a map of three-dimensional space. Paint endures as an optimal medium for building a multivalency that exemplifies space that "fluctuates in a continuous activity."1 Slowly unraveling the spatial layers of an abstract painting serves as a parallel to the practice of recognizing an architectural sequence. Abstract painting offers design students a focused reprieve from digital media and indispensible practice with gravity and patience.

1. Rowe, Colin and Slutzky, Robert. "Transparency: Literal and Phenomenal." Perspecta, Vol. 8. 1963, pp. 45-5

Impacts of Computer Aided Software to Introduce Architectural Drafting for Beginning Design Students

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Keywords Design Drafting, Computer-Aided Design, Design Communications

A B S T R A C T
Rapid changes in technological innovations and the tools available to support the design process has drastically affected how design education introduces the foundations of design drafting, process, and presentation in today's architectural and interior design education curriculum. While the conventions of the traditional drafting is centuries old, Ozkan and Uildirim (2016) acknowledge that conventional design drafting courses has been essential for students to cultivate the timeless principles of design process and drafting (Clayton 2010). However, design process and drafting has been altered to focus in computer-generated or-based design in today's design curriculum, thus the digital methods lead the students to more aggressive experiments with stylish expression in graphics. As a result, the profound change has been that beginning design students are introduced to the digital methods to maneuver various software to produce automated drafting and explore designs even before they cultivate a cognitive perspective on the holistic design drafting approach and performance as a part of the design process.

This paper posits that while the digital methods or process is likely to produce design solutions with reduced efforts, it may impedes the students in the learning of the poetic expressions of architectural art as well as the values of the holistic design drafting as a part of design process. This paper describes a handful of recent research efforts to illustrate the impacts of digital design methods to beginning design students to exploit the understanding of the principles of technical drawings to further explore design concepts.

Real-time Metacognitive Teaching Strategies for Deeper Design Learning

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Keywords Metacognition, Self-flection, Strategies

A B S T R A C T
This paper (presentation) identifies and describes teaching strategies used in a first-year M.Arch studio (for students without a pre-professional degree) that begin to demonstrate the value of metacognition as a learning goal for design students in architecture.

In his 1979 seminal article (in American Psychologist), John H. Flavell identified metacognition as an area of research ripe with potential to change the way learners learn. Flavell's model proposed the monitoring of "cognitive enterprises" through "four classes of phenomena: (a) metacognitive knowledge, (b) metacognitive experiences, (c) goals (or tasks), and (d) actions (or strategies)." Since then, metacognition has been the subject of compelling research that validates Flavell's early work — deepening it, describing its nuances and/or developing related models of metacognition to support a range of student learning goals.
The design process in architecture is arguably a unique "cognitive enterprise," operating somewhat like a set of matryoshka dolls, where learning and awareness of learning are nested experiences; i.e., we expect students in studio to simultaneously be designing a project as well as be aware of how they are developing a process for designing that project.

This paper proposes ways that studio instructors can be much more intentional and opportunistic about when, where and how to introduce and develop metacognition as an essential learning goal for architecture students. The examples are from a beginning design studio where the instructors (Gayla Lindt and Andrew Lucia) committed to making the implicit understandings of the design process more explicit in myriad ways and throughout the first semester of project work. The teaching strategies by-and-large operate in real time, as a means of focusing student attention in the studio, but in a way that gives learners a deeper understanding of the design process long term.

For the purposes of this paper, the teaching strategies for making tacit design-thinking operations more explicit can be understood conceptually in terms of naming, negotiating and nudging.

As instructors, our willingness to name certain otherwise-unsaid things can go a long way to demystifying the elusive and elliptical design process. This paper identifies resources and discussion topics that address some of the most frustrating conditions (metacognitive experiences) of learning in a studio environment, including iterative, open-ended, nonverbal learning (making and drawing as a way of thinking) and public critique. Negotiating strategies identify and describe how negotiating deliverables and expectations can reveal deeper insight and understanding of each student's design process at a metacognitive level (understanding tasks relative to goals, and actions relative to strategies). Nudging strategies are ways to instill the habit of self-reflection (metacognitive knowledge) with simple conceptual frameworks as a way of getting unstuck or past the blank page (metacognitive experience).

This paper proposes relatively easy-to-incorporate, real-time strategies for deeper impact of design learning. The paper also speculates on related learning theories since Flavell, including, e.g., the work of Hatano and Inagaki on "adaptive experts" (1986); Ellen Langer on "mindful learning" (2000); Donald Schön on the "reflective practitioner" (1987); and Ryan Hargrove on metacognition and creativity (2011).

Drawing the City: Nostalgic Timelines

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Keywords Urban, Imagination, Past

A B S T R A C T
The city imagines its future by improvising on its past
-Svetlana Boym

Drawing the City is a special topics course seminar and workshop that investigates the value and efficacy of alternative methods for representing the urban landscape. Coursework emphasizes hybrid drawing methods– including hand drawing, collage, digital media and graphic illustration– as a way to merge, morph and invent new and original imaging techniques for both analysis and communication.

This course examines the city as a subject and model for representation, research and speculation. In the first assignment students create an archive of visual imagery– some direct observation and some historic research– from Holyoke, MA, an example of a local "rust belt" city. After identifying and isolating the salient parts of their examination, students venture to re-orchestrate the elements of their archive using collage, trace drawing and digital manipulation. Once a new synthesis takes shape, students are challenged to create an alternative visual narrative that begins to address issues of urban decay, population loss and economic decline. Interestingly, all the concepts that have emerged from this assignment emphasize the concept of nostalgia in relation to place-making. Whether the images involve maps, street views, detailed textures, or specific buildings, the concept of remembrance becomes an important link in defining future visions.

For the second assignment, students are confronted with the dense complexity of New York City. To narrow the scope, they were asked to tap into a specific memory of the city– (all nine had been to visit at least once) and extract a phenomenological aspect of the place– based on sensory perception, emotion, and cognition. They were then asked to radically transform that site through representation, taking a clue from precedents like Archigram, Cedrick Price, and Bureau Spectacular.

In both assignments, students learn the value of story-telling in relation to concept development. Each drawing is recognized as a stage where the fragments and pieces are the players that– through certain compositional arrangements– are capable of narrating a speculative past, present and future. "The city imagines its future by improvising on its past," writes Svetlana Boym in her book The Future of Nostalgia. "The time of progress and modern efficiency embodied in the clock towers and the television towers is not the defining temporality of the contemporary city. Instead there is a pervasive longing for the visible and invisible cities of the past, cities of dreams and memories that influence both the new projects of urban reconstruction and the informal grassroots urban rituals that help us to imagine a more humane public sphere."   Drawing the City offers students an opportunity to merge observation, research and memory with the eidetic imagination in such a way that reveals the interconnected relationships between the past, the present and the future.

Community Engagement and Community-Based Projects in Beginning Design Education.

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A B S T R A C T
Community engagement and community-based projects at the beginning design education, help students to develop their civic identity and develop life-long human values that are at the core of the liberal arts education while applying their knowledge and skills in real-life contexts. This pedagogical approach highlights the importance of the role of the designer in society as an agent for social change at community level. Community-based projects engage students with active learning and the practice of design for the public good in our global society. In order to support college students and community partners to build a conceptual framework, they are encouraged to verbalize and articulate their thought process. In this pedagogical approach, student's learning process is shared through the nature of their questions and answers, their interactions with community members, and their ability to take and generate critical perspectives and views. This article focuses on community engagement and community-based projects in beginning design and architectural studios in the context of liberal arts education. It explores community-based projects with community partners in Vermont, including Town Offices and the organization Migrant Justice. By exploring this experience, this paper examines the challenges of the community-engagement approach in creating long-term community partnerships recognizing the social and cultural diversity between community partners and design students, their social networks, and the complex relationship of power between them.

Making Time for an Intermezzo

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A B S T R A C T
There is a point in the semester of a Design Studio, usually about two-thirds of the way through, when the naturally social dynamic of the studio culture, one in which work process and discussion are closely interconnected throughout the semester, gives way to insularity. Under pressure to complete drawings, models, and a coherent design narrative for presentation to a sizable audience of architects and designers at the final review, students feel the constraints of time, anxiety, and competition for recognition. The urgency can hamper creativity, causing design ruts for some students, or a premature closure of design development for others. I find that the lives of the students, and the lives of their work can both benefit, at this point, from a brief, organized, disruption. For this moment, just a moment, the designs that the students have been working on can be put aside. It is now time for another work, to create a story within a story. Each member of the studio shares his/her perspective regarding his/her unique studio experience with the whole group orally, and then graphically. The final outcome takes the form of a poster which combines the stories that capture the generally unrecognized aspects of a studio experience; it's a stitching together of the most salient elements of the individual design projects into one coherent narrative. The break can't last long,

though, otherwise the narrative flow would trip and fall. This intermezzo offers a snapshot or even a time-lapse view of the interactive environment of a studio. This design intermission attempts to borrow something from each project that can be used to create something new- in this case, a team poster. This paper examines that moment, that controlled disruption, to gain insight into the soul of the design studio - the core hands-on experience in an architectural setting. Something special happens in the studio environment due to the unique group dynamics. This paper explores this break in order to highlight the diverse, differential relationship between a studio environment and the students' senses to determine somatically what arouses the students' design thinking and promotes their design investigations.

Building from Within/ Building from Without

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A B S T R A C T
Inherent to the demise of Modernism was the failure to acknowledge that architecture must go beyond the fascination with the object in order to address the growing environmental concern. As such, in an epochal style still proving itself, we became increasingly sensitive to concepts of interdependence, adaptability, fluidity. One could say that architecture as space has been replaced with architecture as field, seen as a condition of interrelated parts that make an ever-evolving whole, a work in progress remaining in process. Nevertheless, one is also inevitably left not only with the question, "When will this too become obsolete?" – after all it's only a matter of time –but also "What will it be surpassed by?", "How?", "Why?" "What is it that I should constantly foresee that I am not seeing now?".

Building from Within/Building from Without offers, as resolution to the inside/outside dichotomy, a third condition: the state of being hidden. The latent disclosure of what connects the unapologetically transparent to the purely opaque demands spatial secrecy and utmost discretion. "The Secret Room" silently guides the pilgrim through what would be an otherwise indecipherable, impossible and impenetrable labyrinthine construct. Surrendering to operating under the incertitude of time, yet without hesitation - albeit after a luscious amount of observation - demands a closer look.

Oscillating between the ludic and the investigative, design problems are taught by means of anomalies while employing spatial gram¬mar (bend, skew, expand, extrude, merge, yield, twist, interlock, lift, carve, fracture, shear, embed, puncture). The intent is to develop a structure that demonstrates resiliency in transitioning between long and short spans programmatic requirements. Students operate in the form selects function spirit in order to allow for various cross-programing strategies to crystallize.

We start from the very small elements of architecture—the ones situated in the immediate vicinity of the body—and use the hand as lens of discovery. We then employ the body as a mean to understand medium elements that surround the body and are partially accessible to the hand. Last, we arrive at larger architectural ele¬ments that connect bodies and house communities. In this way, we make a transition from the composition-oriented foundation studios and anticipate the extra-large elements of architecture that structure urban settings.

Sampling across a pool of precedents (canonical or not) becomes the tool used to negotiate between unique site conditions and their implicit temporal constraints (past, present, and future). Close attention is being paid to apertures with their implied, yet absent, volumes, which become part of the fluid circulatory device. While isolating specific variables in the design process, questions are approached with myriad external information at the detriment of having no internal knowledge. Consequently, the lens of discovery shifts from visible analogies and opens up possibilities of endless spatial permutations

Paper Title: From Basic Design to Design-Build: Abstract Discourse and Construction

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A B S T R A C T
"The built is first and foremost a construction and only later and abstract discourse based on surface, volume, and plan, to cite the "Three Reminders to Architects" in Le Corbusier's Vers une architecture of 1923." (Frampton, 2).

Taking time to absorb and develop basic design concepts over the course of a multi-year design program, a senior-level design-build project, presented here, sets its foundation upon an earlier basic-design abstract spatial exercise.

The pedagogical objectives of this interior design design-build project aimed to demonstrate the importance of construction in developing design work, while at the same time, demonstrating the relevance of basic design principles in built work. A goal was to explore how a design idea, 'parti', or lessons learned in basic design, such as transparency, proportion or the golden section, could remain valid while a project is developed, from schematic design through construction, with the realities of program and structure.

The course pedagogy emphasized tectonics, included analog modeling and full-scale construction. Employing physical models, as well as other methods, thirteen students began working individually, and eventually as a single team to design, develop, fabricate, and install an interior design senior thesis exhibition. Looking back at a basic design exercise produced almost three years earlier, work commenced with sketches as well as analog modeling and digital drafting. As the project progressed, students quickly resorted to digital modeling almost exclusively, which resulted in a project that simply would not stand up. The students' proposed solution was simply to jettison the abstract spatial qualities that made the initial design so desirable for a more pragmatic solution that fundamentally broke with the underlying virtues of the project. The design parameters mandated that the structure be lightweight and self-supporting, but difficulty arose in structuring a thirteen-foot cantilever that was a major space-defining element of the design and could not be held up by columns anchored into the floor, nor suspended from the gallery's ceiling. Returning to analog modeling, a solution was ultimately developed that included L-shaped elements with diagonal bracing capable of producing a double-cantilever.

When it came to realizing their project, students were quick to discard abstract discourse for construction first and foremost. In the end, students benefited from analog models and full-scale constructions alongside other methods of design inquiry, ie: sketching, drafting, digital modeling. In the end, interior design is a material art and it involves the assembly of physical materials, with requisite detailing, but as an art, it must as well stand up to discourse.

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Design as Movement in Time

Author   Patrizio Martinelli

A B S T R A C T

According to a definition of Emilio Ambasz, taken from the catalogue of 1972 exhibition at MOMA "Italy: the new domestic landscape", design is "an activity whereby man creates artifacts to mediate between his hope and aspirations, and the pressures and restrictions imposed by him by nature and the manmade environment that his culture has created".
This act's outcome is, of course, project, a word that comes from latin projectus: from pro (=forward) and the verb iacere's past participle iactus (=thrown). So project have the meaning of "throwing out, throwing forward" (as it happens with the word "projectile"). Project have to deal with the future, it's the designer's act that offers a proposal, through creativity, sensitivity, hope, imagination, culture, for a positive, future, enhanced scenario. It is, actually, a MOVEMENT IN TIME: but not only towards the future. In fact, in teaching, and in particular in design-related disciplines, this movement needs another direction: the past. Any act of design needs a precedent, an origin, a starting point. More than creation (which reminds me of how roman goddess Minerva was born coming out, adult and armed, from Jupiter's head) I think that design is an act of invention, which means, again from etymology, find something (that already exists). "I do not seek, I find", said Picasso.
So, in the moment of teaching, we have to assume this overlapping of movements in time, where memory, history, past, present and future become tools and elements that give depth to the act of design, and to its outcome, the project. This stratification is, for instance, a fundamental component of every domestic interior, where the residents' stories and memories add meanings and emotions to the spatial experience and the narrative of their life. As designers, this sensitivity for past (both historical and autobiographical) is absolutely necessary, in order to build the project for the future. We have to teach to our students the knowledge of the precedents, the capacity of choose among them, and transform and transfiguring them (maybe also betraying them) in new elements of the project, following Mahler's statement: "Tradition is not the worship of ashes, but the preservation of fire". Given this assumptions, I think that one of the most powerful instruments for design and representation is collage, a tool that I use both as an architect and as a teacher. We can interpret this technique as a metaphor for design's relationship with time: collage stratification and

overlapping of elements and parts, coming from history or from the personal archive of the student/designer, can originate little by little a new reality. Future, in collage, does not need to be precisely described or correctly represented but simply evoked, transmitting ideas and feelings of the quality of space, more than cold and accurate data: we cannot control future, often neither the built project will be as we planned, but we can define the basis for what we hope it will be. Moving from past, through present, towards future. Collage, actually, is designer's time machine.

Document Title: From Person to Place: Communicating the Human Form as a Precursor to Mapping

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A B S T R A C T

With regard to architecture, it is arguably the scale of the human that persists in relevancy. Only with that understanding of scale—and the ability to communicate that understanding--can designers begin to explore the multi-faceted complexities of architecture from the experiential aspects (i.e. spatial, formal, atmospheric), to the construction methods involved (i.e. material proportions, size limitations, sequence). It is crucial that architects and design students continue this intense study that acknowledges and communicates both physical and experiential restrictions and possibilities of space relative to the human condition. This paper will look at introducing and expanding upon notions of the human scale in an effort to cultivate an understanding of what has long been associated with architectural education (the past), while promoting new modes and methods of abstraction and representation relative to mapping in beginning design studios (the present).

Not unlike Leonardo daVinci's Vitruvian Man, where proportion and movement are accounted for, the beginning design students were first tasked with accommodating those challenges--in addition to engaging in the representation and abstraction of the five senses—in two-dimensional studies. These elements inherent in the human body—that can also include time, speed, stresses, heat, etc., can be applied to a grander scale relative to place, and therefor prove beneficial to study at the novice levels. The assignment was one in which they (the students) were their own subjects, and their highly personal traits were encouraged to be brought forth. Those with glasses or contact lenses or loss of hearing (and so forth) began to map such effects in their drawings. Personal activities such as playing the piano or tennis were also encouraged as a backdrop in which to pursue the challenging assignment. The exercise of introducing the senses to the assignment encourages students to grapple with abstracting the "sphere of influence" in order to further understand the spatial implications of the human body. This understanding posed a design problem not unlike the mapping of a site in which students are challenged with collapsing, revealing, and communicating often ethereal and intangible information into legible representations.

The two-dimensional representations of the human body then influenced form-making related to human proportions where design decisions moved into the three-dimensional realm—both relief and sculptural. Materials and model construction prompted strategies that encouraged mixed media and the inversion of positive and negative spaces--to name a few. Parallels to mapping begin to become more evident (albeit spatial) through this progression of studies.

Studying and representing the human form in a variety of modes (with or without contextual information) served as a scale that was readily available and accessible; and design students could subsequently begin to implement sound communicative ideas at the larger scale of the built environment. Elements such as time, movement, before, and after are crucial to architectural study. By sequencing the complex study of the body as a precursor to the intricate study of the built environment, we afford beginning design students the opportunity to make rich connections that can be more clearly articulated and communicated.

Clarification of relevance to the conference theme of TIME: "By sequencing the complex study of the body as a precursor to the intricate study of the built environment, we afford beginning design students the opportunity to make rich connections that can be more clearly articulated and communicated."

Learning to Think Urban

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A B S T R A C T

Francis Tibbalds famously defined urban design as "everything you can see out of the window." True in its essence, this definition makes urban design practice daunting for anyone, let alone the beginning design student.

As in any design endeavor, the field is wide open and the process is anything but linear — there is no single way to approach or solve a problem — and design must engage and respond to several complex dimensions and multiple scales simultaneously. For urban design education, with such a wide domain, this becomes a challenge but also an opportunity for a more diverse set of entries into the design process. The typical beginning urban design studio student, whether in architecture, landscape architecture, urban planning or dedicated urban design program, is more experienced than the beginning design student. The student brings a more developed and nuanced understanding of the role of design action. This may sometimes be a drawback, but more often than not this provides many more ways for the varied student body to learn, understand and perform urban design — as long as the design instructor can provide multiple ways to engage the act of design and thus be able to connect with different students with multiple and disparate sensibilities. One such distinct sensibility is the temporal dimension. Time, as history as well as future, plays an important role in architecture. But time plays an even more critical role in urban design: cities and places in cities take a long time to be shaped and mature, and the realization of most urban design work occurs over years and even decades.

In this context of multi-scalar, multi-dimensional and temporal complexity, how should the beginning urban design studio be taught? And, what should be the goal of such instruction? In this paper, I argue that the single-most important purpose of the urban design studio (and other associated instruction) must be to instill an urban attitude and sensibility — teaching to think urban. Using examples—many from a forthcoming book—I will present distinct ways to engage the urban design student via knowledge, wisdoms, information, observations, design directives, and design tools. Using this wide-ranging palette of inquiry and design thinking with a recurring theme of ordinary life, I will demonstrate how making the student closely look at the city and find inspiration in the everyday, particularly in the context of time, has the potential to transform and inculcate an urban eye of the mind. After all, critical thinking with regard to urban design pedagogy must first be about instilling keen ways to see the city and to learn to recognize and appreciate urbanity.

Vainglorious Precepts: Leveraging the Past to Appreciate the Value of Human Centered Design

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Throughout history, Design was often employed as a means to convey wealth, influence and status by both the client and the designer. More recently, avant-garde novelty became central to this pursuit. Fueled by media attention and critical acclaim, a select stable of designers came to enjoy celebrity status and sought to produce increasingly iconic works. The Fountainhead's Howard Roark embodies this phenomenon. Refusing to neither compromise his creative principles, nor honor his client's requests, Roark epitomizes the modern design-hero stereotype. Author Ayn Rand explained that Roark, "struggles for the integrity of his creative work against every form of social opposition" and represents a new concept of rational self-interest. He is an independent thinker who does not value the input of others when making decisions and is a demonstration of the principle of egoism. Caught up in the rising media frenzy depicting the designer as an avant-garde hero, many beginning design students were inspired to pursue the design disciplines as a path to personal success and renown only to become disappointed.

HCD (Human Centered Design) is a participatory design methodology that solves problems by considering human users and their needs while applying human factors and usability knowledge. In stark contrast to Howard Roark and his ilk, the HCD designer casts herself in a much different mold. The human response is central to this process and carefully recorded throughout the brainstorming, conceptualizing, developing, and implementing steps. HCD has been shown to be highly effective; enhancing human health, safety and performance. A finely tuned sense of empathy is key to successful outcomes.

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Learning through Prototyping

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A B S T R A C T

This paper explores the methods used in architecture teaching to prepare students for the future and their own lifetime of learning. Students are currently reliant upon technology, which is a quickly changing medium. The experience of teaching studio and technological courses provides an overview of the need to teach students to be adaptable for their future needs. To study adaptability with a futuristic approach, design teaching methods are reviewed and observation research method is used. Stanford's d school categorizes design thinking as Empathise, Define, Ideate, Prototype, and Test. This paper focuses on the design thinking, providing end results through prototyping and testing.
This study provides a series of assignments and samples used in a studio and digital fabrication course, using the observation research method. The concepts and process in design remained similar through time, regardless of the changing media of presentation. During studio critiques, when students comment on each other's work (ideate, prototype and test), they learn how to find design solutions based on changing needs. One of the techniques used to make students adaptable is teaching students to do research and learn the "process" when facing a new challenge. The process in the case of teaching a software, for instance, is the workflow and logic of a software which remains the same using other computer programs. Learning Autodesk Revit is a common example for students, which makes them familiar with the logic of Building Information Modeling and vector drawings, similar to other drawing software. As a result, when students learn one logic, learning the future updates would be smooth for them.

Da Vinci's drawings are excellent examples illustrating a thought process based on the needs of the time. When students learn that their design lasts for decades and ask themselves about possible demands, they are on the right track to find solutions. This part could be translated in empathise and defining steps of design thinking. Student work samples presented highlight the role of learning through a logical process, which notifies students about their failure based on testing solutions. The conclusion reiterates lessons learned from focusing on the process and prototyping in a classroom, to prepare students as future decision makers in design.

In-Between Memory and Anticipation

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A B S T R A C T

One of the most challenging aspects for the beginning design student is the inundation of new knowledge, skills, and the management of time to accomplish these things. Design requires expansive time to absorb, rethink, rework, contemplate and start again. Added to that is the realization that, during this struggle, one is designing space and time. Where does history and memory fit into the process and how should the anticipation of space play a role in design choices? The student grapples with the design process and after much frustration may come to the conclusion that there is not enough time to contemplate and reinvent temporal events. The dilemma is ironic but also an opportunity to make the subject of "time" the natural place to start the design studio.

This paper illustrates that the focus of time itself will help the student understand the value of taking time in order to reveal its significance and meaning in architecture. To best illustrate this several foundation studio projects are used to explore the temporal ambiguity of space. While the past and imagination are the bookends of experiential events in architecture, it is awareness of the present that needs attention. Making space for time is to temporarily do away with efficiency and distraction and allow for deep, slow thought. A revelation occurs that time cannot be rushed, put on hold or ignored. For example, a twelve-hour study of shadows demands attention, revisiting, observation and finally revelation. No technology or theatrics can imitate the nearly imperceptible faltering light when sunlight begins to disembark from the very matter it had been so keen to rest on, filling the space with tranquility and silence. Time is moving, relentless, and exquisite; if you do not pay attention you will miss its genius. First year studio begins with observations of composition, transformation and interplay with environmental conditions by dissecting a solid box into fragmented pieces of space and then watching natural light move across and within the form. During this time there are several somewhat tedious exercises: building finely crafted models, waiting and photographing the interplay of changing light, and hand rendering shadow conditions.

Successive studios focus on the idea of the narrative centered on a historical site that has a longstanding relationship with its community. What is most valuable now is the student interaction with a community that has a relationship to the site over many decades. Understanding and empathy develop as the student and public begin to understand values and goals that become intertwined.

Typically the students become emotionally attached to these projects, not because they are beautiful, but because they represent a moment when all attention was on the most valued asset: time. The projects represent a period of their lives when a significant phenomenon was revealed. Suddenly they can find ways to visually represent time, manipulate perception of time, and most importantly narrate a relationship with time that becomes a primary factor in the architectural experience.

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Time Travel for Beginners

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Keywords Timeline, Transformative, Future

ABSTRACT

We are all familiar with timelines, although many of us are unaware of the transformative effect they can have. Timelines may include historical events, which are important when associating past legacies that connect with conditions today. This longer sight through time gives us a glimpse of an extended view of such connections. Comprehending the present situation is also valuable. With this understanding, designers can appropriately react to current events. However, creating timelines that project into the future can be compelling tools enabling us to anticipate forthcoming events. When designers look deeply into timelines we see people and situations anew. This vision can change our professional trajectory.

Seeing the bigger picture through the past, present, and future helps to train the mind in understanding what is really there to be seen in a holistic way. This insight inspires us to see the world around us with new eyes and an informed mind. From this viewpoint, we can observe aspects of our immediate surroundings or our global communities in ways that are unique to our individual perspectives. This insight can change experience, revealing alternative ways to interpret everyday challenges or complex global issues. Creating timelines provides accurate and complete information, and this knowledge becomes a guiding force for developing future design solutions to challenges we face today.

Life Timelines are one of several different types of timelines and among the most transformative since they focus on our individual lives. Personal focus can be significant. It shows us various paths to take as we experience life-changing events we encounter as we travel through time. Life Timelines also reveal what we value most. They cause us to look at life in new ways and make choices based on this new outlook. At this point in time, our broadminded awareness is a catalyst for beginning new projects and activities that reflect our life values. Various timelines will be revealed through this paper and presentation, including Life Timelines that have had potent life-altering effects. Together, we will travel through time and discover how meaningful things that are vital to us today connect to the past and influence our future.

Drawing THEN & NOW:

Re-focusing freehand drawing skills with photodrawing

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Keywords Return, Skills, Media

ABSTRACT

This paper focusses on the re-visiting and re-application of foundations year freehand drawing skills in the later curriculum.

It has been my pleasure to teach Foundations studio for the last twenty years and in the last three years have taught a freehand drawing elective which has sought to respond to the desire of senior students to revisit/rediscover their foundations. Many of these students have not done much freehand drawing since first year and still associate it with either a quaint anachronism or with their first year experience where it is taught as its own discipline, without distraction. For them, the particular, deliberate and iterative practice of skills in first year has given way, over time, to the multitasking demands of advanced studios employing much digital software: they have learned to trust the machine.

Many students take my 'Freehand Analytical Drawing' elective out of nostalgia, skeptical of relevance to what they 'now do'. As it turns out, the reapplication of their dormant freehand drawing skill combined with their maturity of understanding is a powerful mix. Their ability to manage complexity allows for a freehand drawing class to experiment with images that oscillate between the seen and the unseen. In this regard, I am particularly interested in hybrid images such as section-perspectives that employ the photograph to show what is 'seen' and the drawing to depict what is unseen: 'imagined' or 'known'. The photo demands presence, and the drawing; knowledge, analysis, and imagination.

In his book, 'The Thinking Hand', Juhani Pallasmaa, says "The hand-eye-mind connection in drawing is natural and fluent, as if the pencil were a bridge that mediates between two realities, and the focus can constantly be shifted between the physical drawing and the non-existent object in the mental space that the drawing depicts." In this work, I see the eye as a bridge that mediates between these two realities: the camera's eye and the human eye, working together to see and re-imagine the world.

As a teacher at both ends of the curriculum, I will discuss the value of re-igniting latent skills taught the early years and putting them to use to see anew.

References:
'The Thinking Hand' by Juhani Pallasmaa
'Manual of Section' Paul Lewis, Marc v Tsurumaki, David J. Lewis
'Language of Vision' by Gyorgy Kepes
'Hybrid Drawing -techniques of Contemporary Architects and Designers' by M.Saleh Uddih

Building Community Between First-Year Foundation Students on a Commuter Campus

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Keywords Community, Beginning, Transition

ABSTRACT

The transition from high school to college can be very difficult for many students. At an open-access commuter college, these difficulties are often amplified. In order to assist incoming students with just such a transition, the University of Cincinnati Blue Ash College recently established block scheduling and created program-specific Learning Communities in the Applied Graphic Communication program. The Learning Communities, implemented through weekly meetings led by peer mentors, support freshman by addressing college resources, healthy living, time/stress management techniques and study skills. The peer mentors facilitate encourage positive social interaction between students and promote student-faculty communication; they also work closely with faculty to support students who may be struggling academically.

The benefits of student participation in a learning community can be positively linked with academic performance, collaborative learning, gains in attendance and overall satisfaction with the college experience. (Zhao and Kuh, 2004).[1]

In this presentation we will review the pedagogical role of Learning Communities in the first-year experience and share planning and implementation strategies used at the University of Cincinnati Blue Ash College. We will discuss the impact that cohort scheduling, learning communities, and peer mentoring has had on first-year student retention, morale and academic success. Finally, we'll examine past and present practices, as well as future plans to strengthen the program.

1. Adding Value: Learning Communities and Student Engagement, Chun-Mei Zhao and George D. Kuh (2004, p. 124).

Design(ing) Education : Education Design(ed)

The Charter High School for Architecture + Design

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Keywords Diversity, Urban, Beginning

A B S T R A C T

Before a student arrives at your school to pursue a design career, something – somebody, somewhere, somehow – engaged, nurtured, and inspired the quest. What happens when a teenager isn't even aware of the path? What if young men and women, urban and under-served, have never heard of or imagined design careers?

What happens when the first eight years in public education are defined by inadequacy? When students are defined as having limiting inabilities to cover institutional failures? What happens if a student is randomly selected through a lottery, and slowly discovers the limitations aren't real?

> *This is the beginning.*
> *This is where we start.*
> *This is the story of CHAD, where students shed their past and design their future.*

Founded in 1999 by the Philadelphia Chapter of the American Institute of Architects, CHAD's mission is to engage and educate students through the power of design thinking and to introduce them to creative career opportunities. CHAD is the first charter school for design in the nation. Today, it leads a growing consortium of like-minded schools.

Each fall, two hundred Philadelphia freshmen enter The Charter High School for Architecture + Design in Philadelphia. They join about four hundred fifty upperclassmen. Every day, the community arrives from dispersed neighborhoods, converging from fifty-one zip codes to a Philadelphia corner at 7th and Sansom Streets.

Students frequently begin 9th grade benchmarking well below established grade level proficiency levels in math and literacy. What they know, or think they know, is what they can't do: mathematics, writing, reading. They know this because standardized tests tell them so.

Art awareness and cultural literacy, if they were measured, would be even lower. Though – like all of us – they are exposed to design every day, all day, they begin with little experience in art making and even less in design awareness.

The lack of experience in design is an invitation. It's a clean slate, a tabular rasa. We set to work. With patience, prompting, and prodding, students are invited to think with their hands. They make, and they make, and they make. Four years later, seniors have a major: architecture, graphic design, fashion design, fine art, environmental design, industrial design, interactive design, or mechanical design. They graduate. They launch lives into fields they once didn't know existed.

CHAD is a tuition free school of choice. There are no special admission requirements. It is one hundred percent free breakfast and lunch. The graduation rate is in the mid-ninetieth percentile, twice the regular school district rate. Graduates attend colleges with significant scholarships enabled by their design portfolios.

Since the school's inception, and in particular over the past eight years, the CHAD's design curriculum has been developed and refined to establish the design process, design thinking, and design education as the preferred alternative to traditional primary and secondary education models. This paper and presentation will elaborate upon the story of the school and its curriculum. It will offer an overview of its current status, trace lessons learned, and articulate future goals.

"Save-As: Archive of Obsolete Objects: Engaging with Existing and Future Neighborhood Revitalization"

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Keywords Save-As, Urban, Community

A B S T R A C T

Time and Save-As
As a product of the Detroit metro area, over time I have witnessed various attempts, successes and failures to 'save' the city. Time has shown that there is now less of an emphasis on saving Detroit as there is in Save-As Detroit. What do I mean by Save-As Detroit? As we know when working digitally, one has the option of saving a version of their project without writing over an older, foundation version: Save As. Over time, Detroit's history, the architecture and people, have amalgamated to its present-day foundation. Leveraging the past through re-visioning and celebrating Detroit's current foundation through a contemporary design lens, if Saved As, we can merge modern urban planning strategies with the strengths of the existing foundation. Time can therefore be harnessed to work for us, through the celebration of and building on existing resources and communities to create better environments for its citizens.

The Save-As Model
Save As is rooted in the idea of time influencing the layered foundations of a work. An example where Save-As is currently being realized in Detroit is the Fitzgerald Revitalization Project: a proposal to transform existing vacant land, currently detracting from the neighborhood, to a series of connected pocket parks and paved paths that weave through the community. Attracting pedestrians and bikers, these parks will enhance the immediate neighborhood but also the surrounding neighborhoods. Located near a major freeway and the burgeoning Livernois Avenue, the Fitzgerald neighborhood has the potential to thrive as a community and contribute economically to both the local business community and nearby residential neighborhoods.

In Architecture Design Studio II, the students' final project is an urban in-fill design, 'woven' in to the Detroit Fitzgerald Revitalization neighborhood context. This 1st year design project titled an Archive of Obsolete Objects is both macro and micro in scope; rooted in how to celebrate the obsoleteness of objects, their obsoleteness determined by time's progression. Students are tasked to: 1. Examine the effect time has on an object that may no longer be useful¬–and how that non-usefulness impacts the design of a space intended to celebrate it, and 2. Design a community gathering space, public park and paved paths that tie in to the Fitzgerald Revitalization project. Utilizing a drone to obtain pictures of the existing site, students create digital hybrid images. The hybrid images become markers of time; for visualizing their designs with the site. The pedagogy is rooted in creating a series of process projects over the semester that harness design insights gained through iterative processes. Through the process of merging the Fitzgerald Revitalization Project and the student's Archive of Obsolete Objects, we become visionaries harnessing time as a Save-As condition: as both a relevant, past foundation as well as a tool to create potential spaces that celebrate local communities and make an impact on cities.

Systems of Space: Traveling from 3D to 2D and Back Again

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Keywords Adaptability, Uniformity, Technology

A B S T R A C T

Architecture studios begin with varied muses. Professors launch projects with sites, precedents, paintings, ecologies, or form-finding exercises. Among these starting points is a constant act — a "leap" from analysis to design — crafting a spatial premise. This is a complex moment, when some students are praised for intuitive talent and others struggle. A spatial premise guides a design process.

In beginning design education, a systemic spatial premise is a useful device. Systems of space are useful because they are adaptable across scales, programs, and materials. A System of Space is a uniform geometry, or logic, that defines (or implies) a three-dimensional space; it may also be represented two-dimensionally. A System of Space can be adapted into a site strategy or a stair profile, into a skin system or a structural logic. While abstract, a spatial system is definitive, identifiable, and comparable.

This methodology begins with a "Still Life". Through analytical drawing, students reveal a system of space in the Still Life and clarify it in two dimensions with a series of timed studies. Students then adapt the system of space into: 1) multivalent skin, 2) tectonic cloud, and 3) solid situation. The ZUND, laser cutter, and 3d printer highlight the adaptability of the spatial premise across paper, wood, and plastics.

		Methodology	Technology
1.	3D	Construct a large, "Still Life" of Linear Objects, some transparent.	Build
2.	2D	Analytical Drawing: Draw the Still Life, the edges, contours, and trajectories. Not just the objects, but the space between. Draw using precise lines. Develop a catalog of line types and weights. Change seats and rotate the paper in timed drawings. Repeat. Highlight persistent geometries. Highlight visual contrivances and illusions. Identify a system of space.	Draw
3.1	3D	(Multivalent Skin) Adapt the System of Space into a paper relief model. Translate the spatial system as cuts, scores, and creases. ZUND it into a folded surface.	Zund
3.2	3D	(Tectonic Cloud) Adapt the System of Space into a set of uniform components. Assemble the components into a notched, skeletal cloud. A tectonic idea is explored through the organization and connection of the material components.	grasshopper + laser cut
3.3	3D	(Solid Situation) Adapt the System of Space into thickened solids that situate the movement of the body in time and space — bench, entry, floor, ramp, stair, wall.	3D print

For each spatial premise — each system of space — one analytical drawing spawns three material constructs. The heart of the approach is not the qualities or media of the "Still Life" but the speed, re-orientation, and dimensional travel of the analysis.
In beginning design education, this methodology guides students to:
- *Translate between two-dimensional and three-dimensional representations of space.*
- *Explore three different material and tectonic versions of one uniform, but adaptable spatial premise.*
- *Build proficiency and confidence in three digital fabrication technologies.*
- *Suggest relationships and methods for designing building enclosure, structure, and interior.*

Performative Programming: Teaching Algorithms to Design Students

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A B S T R A C T
As a field of study, Graphic Design has been in a 20+ year-long crisis with regard to the question of programming. Departments everywhere continually debate whether to teach code or not. As a discipline, Graphic Design pedagogy is often more comfortable with materials and methodologies that arise out of print culture and professions, as opposed to imprint of digital media. Meanwhile design programs triage courses devoted to web development, invite in UX professionals to teach students applied skills, and bicker over the pedagogical questions surrounding concept vs. software vs. programming. The rapid state of change that characterizes digital media only exacerbates the fervent atmosphere around digital practices. Students often approach code with trepidation and a sense that it is a dull but necessary skillset to learn as opposed to a set of practices worth exploring. The question continually gets asked (with little added nuance) by professors, students, employers and administrators—"Do designers need to know how to code?"

This presentation will attempt to introduce new frameworks for addressing questions of code in the discipline of Graphic Design by looking at historical precedents, case studies from current assignments, as well as an in situ participatory component. Digital practices are generally taught through a material approach—students are taught programming languages through tutorials and projects. When instructors do apply a historical memory, forebears are usually referenced from silicon valley and early computational artists. In contrast, I propose a method with owes just as much to art movements such as the Fluxists and Yoko Ono, composers from the serialists to Steve Reich and other movements that emphasize algorithmic

conditions as a process of making. Rather than devoting resources to ensuring students master a specific programming language or paradigm, I believe it is necessary to build a clear understanding of parametric thinking and making. As much as this arises out of building websites or using creative coding platforms such as Processing or Open Frameworks, it also gets developed from conditional design practices, a careful study of formal systems (such as typographic programs), and a close look at writers, artists and designers—such as Sol Lewitt or the Oulipo—whose work engages with analog algorithms as process. I suggest that these pedagogical practices operate to build a sustainable teaching model of design which gives students the conceptual and practical tools to think and make critically about a culture that increasingly runs on procedural paradigms.

In service to this approach, I propose a series of projects for students from their first to final years in their Graphic Design education: These include performative tape installations, procedural book-making, websites as close readings of interactive experiences, browser extensions, spatial re-mapping, web-to-print projects, interactive posters, and others. These counter-intuitive forms all serve to develop an understanding of the underlying principles of parametrics, while introducing students to ways of leveraging their own creative practices against the conventional materials of digital media

"I thought it would be a lot less thinking": Variations in Students' Preconceptions of Architecture from a Beginning Architectural Design Course

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A B S T R A C T
Architecture students begin their professional programs with conceptions of the design process, architectural practice and the profession, and their learning takes place against this backdrop of existing knowledge. How do students' backgrounds shape their preconceptions of architectural design and practice, and how do these preconceptions inform how students think and learn? In this paper, I describe the qualitatively different conceptions of architecture of nine students enrolled in a first-year architectural design course in a Bachelor of Architecture program at a public university.

Utilizing phenomenography, a qualitative research approach aimed at studying the variation in ways people experience, conceptualize, perceive and understand phenomena, I investigated the ways which variation in students' preconceptions of architecture manifested in how students made meaning of their learning throughout the course. Nine students were interviewed at the beginning of the course on their perceptions of design, architectural practice, and what being an architect meant to them. The students were then observed and interviewed throughout the course. A multistage analysis identified categories of conceptions, and these categories were compared to how students made meaning of their learning later in the course.

Variations in conception of the architecture design process ranged from initial idea formulation to final evaluation. I discovered that high-achieving students placed emphasis on representation, evaluation and subjective judgement, and regulated their learning in the course by these metrics. Students' conceptions of architectural practice varied between internal characteristics and external orientations. Non-traditional students, students of color, and female students demonstrated predominantly external orientations, such as human-centered practice and collaboration, and placed these values at the center of their motivation to become architects. Students' conceptions of the architectural profession were limited, even for those who had an architect in their family background. This limited view of the profession led to tensions between their conceptions and the perceived relevancy of their learning and practice in the course.

The call for papers for the 2018 Beginning Design Conference asked, "Should beginning design education serve as a formalized and unified restart for all students, regardless of their point of entry?" I assert that such a 'restart' is not possible, nor is it productive to assume students can and should unlearn their previous understandings to be successful architecture design learners. Through demonstrating how variations in students' conceptions of architecture inform their new learning, we gain a deeper understanding of how beginning architecture students integrate new knowledge into existing knowledge structures. These understandings provide context for developing curricula and teaching practices that leverage students' preconceptions as foundations for new architectural design knowledge.

"The Beginning Design Student: Pedagogy and Pattern"

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A B S T R A C T

With a broad spectrum of cultural and artistic periods, designers and works worthy of discussion, one challenge for the beginning design student is developing an understanding of the history of the field and the value of historic analysis and research in building design skills. Rather than offering an encyclopedic collection of works in a design history course, it can be advantageous to consider particular works/buildings/objects as a methodological opportunity to build the student's analytical and research skills. With this practice in mind, I have been investigating the utility of object-based research as a pedagogical tool. This paper will focus on one assignment, "The Pattern Project," for beginning interior design students as a means of developing research and analytical skills.

The focus of the "Pattern Project" for the beginning design student is to use textiles as a point of departure to explore the intersection of narrative, technology and materiality. In choosing a historical pattern for research and evaluation, students begin exploring the pattern formally, thereby honing their observation skills. Students evaluate the materiality, scale and complexity of the pattern that inevitably lead to questions about how the pattern was created and used. Through pattern research, students explore the ways in which textiles communicate and transmit meaning, and further, how textile research can be utilized to provoke an understanding of the cultural, political and economic circumstances of a particular time and place. Such an investigation naturally poses questions about production and consumption that underscore shifting economic, political, regional and global relationships. The assignment culminates with an oral presentation of their findings and an 18" x 24" presentation board in landscape orientation that communicates their research and design analyses. This exercise allows beginning design students to further develop their graphic and oral communication skills, considering the relationship between object and text in a meaningful way. Students consider legibility and self-editing as significant elements in sharing ideas. A key part of this process is developing students' understanding of relevant sources, citing when appropriate both text and images. This paper explores the value of textile and materials research for beginning design students as a means of developing analytic and research skills. The intention for students is twofold: 1. to develop a methodology for the evaluation of an object or space and 2. to gain a greater appreciation for the complexity of objects that often serve as surface decoration. This paper will share student work from the fall 2016 and fall 2017 semesters.

Rediscovering Froebel: Discovering Architecture's DNA

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A B S T R A C T

"The active and creative, living and life producing being of each person, reveals itself in the creative instinct of the child. All human education is bound up in the quiet and conscientious nurture of this instinct of activity; and in the ability of the child, true to this instinct, to be active."[1]

Friedrich Wilhelm August Froebel was a German educational theorist who laid the foundation for modern education based upon the unique attributes and capabilities of children. Since 2008, I have developed a design process using Froebel Gift Sets 3 through 6 that encourages students to discover and interpret the underlying patterns and structures that comprise their world as a preamble to design. Recalling the nature of DNA, the molecule that carries the genetic instructions used in the growth, development, functioning and reproduction of all known living organisms, the abstract compositional outcomes of the Froebel based exercises reveal aspects of the essential nature of things. I have used this process with student populations ranging from secondary STEM populations to architecture undergraduate and graduate students. Examples showing the deployment of this method with undergraduate students, can be found in part per the link below which is a portion of a film project being developed by Froebel USA and Match Frame Creative for PBS.

https://vimeo.com/194536568/547a965ac2

The initial design process begins with the students building Froebel Gift Sets 3 through 6 in terms of their contents and container from a raw section of maple or other native species. The container construction explores box joinery and celebrates various movement and operational strategies for its opening and closure. The gift set contents are to fabricated to within one thousandth of one-inch degree of tolerance. The students then use the gift sets to explore systems of order, both emotive and analogic, as well as traditional architectural ordering systems through a series of timed exercises which are photographed and drawn to explore their experiential content. Additionally, students explore a tectonic theme discovered in nature which they capture in black and white photography and express as a Froebel composition and explored further through experiential drawing.

From this point in the process, the exercises branch out into related issued-based exercises related to the larger design problem. If it is a site design or master plan, the students may explore their Froebel compositions as a paper weaving to explore site part/whole affinity. If it is an architectural problem, I ask the students construct their own tools (Mallet, Hand plane) to construct a joint (Column/Beam + Column /Base) derived from their encounter with nature through their photography and Froebel exercises. Like DNA, the column-base condition acts as a kind of architectural Rosetta Stone, informing the architecture from tectonics to morphology. To date, I have explored this process in scales ranging from the site, the building, the room, the detail, and the object depending on the experience and year level of the student cohort. Currently, we are working on a Visitor Center at Frank Lloyd Wright's Westcott House in collaboration with Peter Bohlin.

The Froebel-based design process foregrounded here envisages time as a generative dimension of design inquiry. Through the exercises, student design narratives emerge out of the diversity of their past experiences and memories that are suspended and intertwined in a visceral and tactile present. Captivated in the simultaneity of their individual and collective responses to open nature of the design prompts, students discover the patterns or design DNA that will inform their future design speculation, decision making, and project outcomes.

[1] http://www.froebeldecade.com/sonntagsblatt/

Animated Architectures: Developing a Sense of Sequence, Transformation and Time in First Year Studios

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A B S T R A C T

This paper examines the use of algorithmic and analog parametric based methods in the design process and proposes an implicit pedagogical approach for developing a sense of sequence, transformation, and time in first year design studio work. Despite its detractors, parametric methodologies are the norm in advanced design studios at many if not most schools of architecture, Use of algorithms and parameter based, or scripted, geometric processes may be the future of design and architecture, in education and practice.1 Daniel Davis is quick to point out, however, that all design is parameter based, and always has been, and that while modern parametricists are engaged in processes that seem to lend themselves to, or crave, computation, they are just as well done by hand, and that the computer, like a hammer or a ruler, is just a tool and that parametric design is, in the end, just design.2 Yet, the way in which parametric design is currently employed seems to be much less about method, approach, or process than formal and aesthetic agendas – something that is concerning to many of us who are introducing young minds to the design process for the first time. Despite this debate and the obvious tension between attitudes toward old and new ways of doing things, process, transformation, and perception of the passage of time are not only fundamental to design thinking but to our basic human experience. Even before parametric computation began to lead us so forcefully toward aesthetics, J.B. Jackson warned of our preoccupation with the organization of form and space and our ignorance of time.3 Choosing to operate within a middle ground, teaching process and transformation while utilizing parametric methodologies to do it, we attempted to find the root of design and the design process, investigating the fundamental nature of what defines all known matter – morphology and physiology – and what might distinguish designed "things" apart from the rest of it – intention. Leaning on the theories and strategies of Alan Turing, Ron Resch, and Sol Lewitt, among others, students focused on contextual analysis, value definition, and pattern identification and developed simple algorithms and descriptive rule sets to establish generative, deterministic processes based on a fundamental process of all natural design – repetition, aggregation, and mutation. Although the output was often complex, the simplicity of the process allowed for manual techniques rather than a reliance on digital fabrication. Lacking the more precise benefits of digital tools, high craft in student work was achieved through rigorous iteration. In this way, the gap between the basic design education was bridged more through modes of critical thought than through modes of production, allowing parametrics to become a vehicle for the process of transformation rather than a matter of generative geometry. An assessment of

the studio experience is presented, including student work. This assessment evidences both the successes and failures of the pedagogical and practical strategies implemented and reveals the quality and effectiveness of utilizing parametric design processes to develop a sense of time in the design process.

Notes
[1] Rybczynski, Witold. "Parametric Design: What's Gotten Lost Amid the Algorithms." Architect Magazine. Web (July 11, 2013).
[2] Davis, Daniel. "A history of parametric." Retrieved February 5 (2013): 2014.
[3] Jackson, John B. "A Sense of Place, A Sense of Time." Oz 8.1 (1986): 6 – 9.

Chemical Colors

A Foundations Project Engaging the Dynamics of Color to Illustrate the Powerful Contexts of Chemical Compounds, Produced for Industry that Find Their Way into Natural Environment.

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Keywords Imagination, Industry, Adaptability

A B S T R A C T
The Ohio River has been listed as one of the most polluted waterways in the United States. Many of the chemical pollutants in the water are under-reported and potentially harmful. I developed a project for Foundations Design students that elevates the use of basic color theory to respond to this environmental problem.

I am working with local environmental organizations and a small group of design students to identify the most troubling chemical pollutants found in the Ohio River. This scientific research will be translated into powerful infographics.

Color is a powerful tool for the creation of sensory experience. The use of simultaneous contrast can create an especially energized and dynamic experience for the viewer. Simultaneous contrast can be used to undermine the legible stability of visual information. A single color hue can be manipulated to harmoniously reside within one field of another color, and dynamically engage within a different field. Similarly, the chemical compound Perfluorooctanoate was used for a long period of time in the production of Teflon and non-stick surfaces. Within this industrial relationship, the compound had a harmonious and productive function. As waste that persists in the environment at all levels this compound is a powerful and dynamic pollutant with clear links to Cancer.

Color can also be used to create emotional content to personify or engage subject matter. Our personal engagement with information is intensified when we have been asked to do perceptual work. The more we have to parse out our reaction to something, the more ownership we feel over our response. Color confusion and manipulation asks us to create our own version of reality. This realm of fantasy and imagination is intrinsic to our relationship to our environment. This project will attempt to personify pollutants as color experiences by representing them as harmonious and productive color relationships within the context of industry and then also dynamic and disruptive color relationships, illustrating their relationship to the environment and body.

Pollution and environmental issues are hard subjects to engage the public on. The use of experiential color creates a new opportunity for emotional and psychological investment on the part of the viewer.

Presentation at NCBDS:
- *Introduce the river historically-animals-fish-, Native Americans-industrialization-contemporary context/use*
- *Introduce color as tool of personification and environmental creation.*
- *Tell story of project*
- *Show process of creation for final graphics*

Project Goals:
- *Utilize the power of foundational studies in the simultaneous contrast of colors to illuminate and animate dynamic and damaging chemical compounds found in the Ohio River.*
- *Assign an abstract shape and color combination to each chemical compound to illustrate that compounds use in industry*
- *Assign an abstract shape and color combination to each chemical compound, according to the nature of that compound's interaction with the body.*
- *Design a sophisticated poster that has the color combinations prominently displayed as well as pertinent information about each chemical and its environmental relationship.*
- *Further disseminate our designs through a partnership with local nonprofit Keep Cincinnati Beautiful.*

Anytime Dept. an Artist-Run Experiment

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Keyword Community Building, Artist Support, Contemporary Art, Education

A B S T R A C T
Anytime Dept. is a curatorial collaborative founded by artists Lydia Rosenberg and Rebecca Steele in Cincinnati Ohio in June, 2017. Anytime Dept. emphasizes the importance of local exposure to larger national and international contemporary art community and is dedicated to nurturing experimental practices. The format of the project recognizes the exhibition as only one of many hosts for artistic activity and works with artists and community members to produce ephemera, events and opportunities for engagement across multiple platforms. Anytime Dept. aims to produce thoughtful dialogues between artists and intellectual communities.

In the first season, invited artists and participants were asked to mount an exhibition and to work with the organizers to produce ephemera and events that would record and extend the dialogues generated in the gallery context.

Anytime Dept. orchestrated dinners in honor of the visiting artists where local community members and volunteers were invited to share a meal and discussion with the artists and curators in an intimate setting. The meals were centered around the themes explored in the exhibitions and were the result of collaborations between Chef Jared Miller and the visiting artists.

This paper examines the historical contexts that Anytime Dept. situates itself within and discusses the discoveries and adjustments made between the ideation and implementation phases of the first season. While the paper addresses practical and logistical issues, such as branding, funding structures, inspiration and geographical limitations, it also describes the shifts in approach and looks to future iterations of this endeavor. While this paper is very much about the beginning stages of an ambitious project, it discusses these kinds of spaces as necessities for the survival of artistic communities that exist outside of the major market centers. Anytime Dept. asserts that important work is being made outside of the major market cities but recognizes the need for a critical and rigorous approach to art. If art is to maintain itself as a critical force that is not entirely dedicated to commodity, artists must direct and reassert control over the expansion of the fields of art and maintain devotion and support to experimentation.

Part summary, part proposal and part manifesto, this paper is concerned with a living project and presents the fluctuations and transformations inherent to this kind of work. Some questions that will be addressed include; what are the limitations and benefits of being a self-funded institution? How does a project with fluid roles sustain itself? Can a project like this be a form of scholarship? Can a project like this fulfill the same learning outcomes as a classroom? What do artists need to foster non-commercially focused creative practices beyond financial needs?

Anytime Dept. came to exist out of a firm belief that spaces such as this can become catalysts for radical shifts in a community, increasing the level of criticality and experimentation of a place.

Of Different Times: Challenges in Re-Designing Basic Design

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Keywords Experience, Diversity, Precedent

A B S T R A C T
In this paper, we reflect on our experience in re-designing the two foundational design studio courses at the Faculty of Art, Design and Architecture in Bilkent University (Ankara, Turkey). Basic Design 1 and 2 are conducted collaboratively by the departments of Architecture (ARCH), Interior Architecture and Environmental Design (IAED), and Landscape Architecture and Urban Design (LAUD). The group of instructors is constituted by regular and adjunct staff from these three departments, while the student population in each section of the course is diverse with respect to both department and nationality. Basic Design 1 covers foundational principles of design starting from two dimensional compositions, while Basic Design 2 deals with the fundamentals of spatial design. The design concepts to be tackled throughout the year are defined in line with Bauhaus School.

Within this context, starting with the 2016-2017 academic year, we have introduced innovations in the course syllabus and the design problems. The struggle was mainly to overcome three challenges that "time" presented to us. First, we had to critically assess the methods and design problems that had been established during the previous three decades of Basic Design education at Bilkent University, and selectively incorporate and renovate them in accordance with current needs. Second, we experimented with different layouts of course design to cover the necessary topics in the 13 weeks allotted to us each semester; with three "modules" (i.e. three sets of design problems), or with two modules and an intervening series of workshops in which students worked on anthropometry, topography, structure and light/shadow in groups, producing tactile results curated into an exhibit. Third, we had to consider the gap between the everyday cultures of the students and the instructors created by time, in order to be able to reach our students in an effective way. Our experience provided us with insight about various issues in relation to design teaching, such as methods of designing the course collaboratively or updating the language in design briefs.

Here, we will evaluate our experiences in the process of re-designing and conducting the course. Through focused interviews with both instructors and students, we will elaborate on both the successful steps and failures in relation to outputs. Our aim is to share and thus utilize our observations about the challenges and methods of teaching design to a diverse group of beginners in established teaching environments of contemporary times.

Introduction to Digital Materiality: Beginning the interplay between digital and material processes with supporting mentorship structures.

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Keywords Mentorship, Technology, Beginning

A B S T R A C T
"Digital materiality evolves through the interplay between digital and material processes in design and construction. The synthesis of two seemingly distinct worlds—the digital and the material—generates new, self-evident realities."
Gramazio and Kohler, Digital Materiality in Architecture

Research in teaching methods has shown that the learner-centered environments that support multi-tasking are best suited for the millennial generation, accustomed to using digital media from an early age, and familiar with computational tools from high school. However, research in design methods has also found that current computational tools for design have a cognitive load on novice designers. Many design educators have incorporated the use of computational tools in the beginning design. The strategies include controlling the complexity of the exercises, to combining analog and digital workflows. In this paper, a design pedagogy is presented where student-led tutorials are incorporated in a two introductory courses to digital fabrication: digiFab and roboFab. The assignments and tutorials are developed in collaborations with students teaching assistants, tapping into their previous experience. A mentorship structure is developed where students help and teach each other, and thereby facilitate the learning process.

The assignments for the course are developed in conjunction with the teaching assistants, who have taken the course or have previous experience in the digital fabrication. In addition to working in pairs and in teams, alternative strategies are developed to accommodate different skill-levels among the students: (1) assignments that iterate through of design for fabrication techniques with increased complexity, (2) the development of "starter scripts" that can be customized, and (3) the creation of a database of fabrication parameters.

Results show that both courses begin with a focus on workflow but evolve into the development of what can be characterized as digital craft. Although novice students are interested in the use computational tools because their high-quality output, and the perceived ease of use, they quickly learn that the fabrication process involves the use of additional techniques to assemble and complete the object being produced. Through iteration students develop an understanding of material properties and can begin to anticipate material behavior. The integration of student-led tutorials and support strengthens the collaboration and active participation.

The integration of student-initiated learning strategies enhances the participation and the feedback to improve the course. The learning strategies presented explore peer-to-peer, student-to-faculty, and human-to-robot collaboration to evolve the teaching of the design for fabrication techniques, for the acquisition of skills to the learning of an understanding of craft.

Observing Time / Employing Positivist Observation as a Bridge to Abstraction in Early Design Education

Author   Johnathon Scelsa

Keywords Experience, Technology, Speed

A B S T R A C T
Much of contemporary design education is predicated on the mythos or generally accepted core narrative of 'a rupture' in western art at the turn of the twentieth century, in the forms of impressionism, post-impressionism and later cubism, as a rejection of renaissance perspectival space, codes of mimesis, and re-presentational realism. This rupture is evidenced in the manner that many design schools operate today, systematically employing the first semesters of education as a period of inculcating students into protocols and languages of abstraction as a means of 'breaking habits' from earlier childhood conventions and ways of seeing the world. While many art theorists have argued, most notably Clement Greenberg, that this step away from representational codes and positivist realism towards abstraction have empowered the artist's agency beyond that of the entertainer, it is also abstraction which is remarkably one of the most divisive, alienating, and exclusionary problems of entering design school today. This process aimed at opening students to a wider set of visual procedures has the potential to be seen by some as a type of brain-washing into a series of skills and visual outcomes that are foreign and endorsed by an elitist cultural regime compounded with the fact that many schools have moved to portfolio based admission requirements and inherently rewarding individuals whom had access to secondary school art historical education.

An alternative history of abstraction of the twentieth century, posited by Jonathan Crary, places the onus of invention not on the select few of the twentieth century avant-garde, but on the change of cultural visual processes that occurred throughout the 17th + 18th centuries, periods often relegated to and simplified to that of 'realism'. It was during this period, that the status of the individual changes from that of a spectator to that of a positivist observer, as can be seen in many achievements of 18th century observers such as Eadweard Muybridge, and Abbot Handerson Thayer whose experiments in observing and experiencing phenomena lead to the ability to deconstruct the world into simpler and more manageable parts of vision. Simultaneously, it is during this period that the development of technologies of vision such as the Camera Obscura, Zoe-trope, and photography were released facilitating the general public as the observer of the procedural process of motion capture whereby the machinery behind creativity became visible. It could be argued that first-year of architectural education should be just this, expanding the vantage point to include the student as an observer of the process of viewing, in preparation to occupying the chair of the painter. In the seat of the observer, they are merely drawing what they know but with rigor.

This paper seeks to demonstrate, that teaching students first as positivist Observers, facilitates a less abrupt or ruptured transition from convention to abstraction in a similar fashion to the ways in which cultural observation techniques that evolved in the 18th +19th centuries provoked the 20th century avant-garde abstraction. The paper will use examples of recent teaching work, in which students have found abstract outcomes through positivist representations of experiencing nature unfolding in time and speed, exposing students to various digital and analog media processes in the capturing of the world before abstracting reality.

Mixed Reality and its Future in Design Education

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Keywords Future, Technology, Imagination

A B S T R A C T
In today's information age, we are witnessing the collision of social media, internet of things, artificial intelligence, big data, cloud computing, virtual-, augmented- and mixed - reality. This raises the question "How will designers be able to process relevant, large amounts of information with limited time in the future?"

Mixed Reality (MR) describes a reality that is augmented with various levels of overlaid digital information. An enhanced MR environment might enable us to speed up the filtering of information, thus saving time that could be used to navigate through increasingly complex design projects. Moreover, with MR, people can collaborate in a 3D augmented space without the need to physically be in the same room, another dramatic time saver. Reality can be augmented with the use of a smartphone, tablet computer or a head mounted display (HMD), which is a wearable computer that allows hands free operation. The Microsoft HoloLens is a state of the art, untethered MR HMD device capable of scanning the physical layout of the user's environment, displaying three dimensional digital content and recognizing gesture and voice commands.

As we know from the past, new technology will affect the design process. This paper will investigate how MR impacts the design process and describe a method of implementing MR in a design studio course. The experience from integrating MR in two separate design studio courses (junior and senior level) will be shared along with the pathways students took to engage with MR using the Microsoft HoloLens.

In the past, the use of computer aided design (CAD) software was reserved for upper level coursework. Now, we are frequently seeing incoming freshman with CAD modeling skills gained in high school. Similarly, in the near future, MR devices are likely to become a fundamental feature in design education.
NCBDS 2017

"Old Habits are Hard to Break: On the Importance of Taking Time to Look"

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A B S T R A C T
Few might disagree with the statement that having a "good eye" is a valuable skill for designers, architects, and visual artists. What does this mean, though, to "have a good eye"? Or perhaps more importantly, how does one get one?

To thoroughly understand these questions would require a comprehensive study that brings together research into cognition, psychology, memory, culture, history, physiology, and other such fields; an interesting study, for sure, but beyond the scope of this paper presentation. Here we will pursue a more direct path and look at the simple but profound interdependencies between looking, seeing, and time, suggesting that the cultivation of and exercise of one's "good eye" depends upon the skillful choreography of all three.

While looking may be a physical act, and seeing something all together different, one begets the other in a paradoxical chicken-and-the-egg feedback loop. When a friend says "Look! A bird, up in the tree!" we turn our head quickly to look for a bird in a tree. We look and see the bird, but then look again and see not a bird but a crow, and not a tree but an oak, and that the leaves are more brown than we thought and that the season is Fall. "I see!" we say when at last we understand; or, "You just don't see me," when someone misperceives our efforts. To look is to see, but to see is another matter all together, a matter of degree, and a measure of understanding or insight that unfolds over time.

Based on experience gained over several decades of practice and teaching in the fields of architecture, design-build, design and studio arts, this paper will present examples and discussion that examine both looking and seeing in relationship to time, and how the elusory subject of having a good eye depends upon and exercises both.

Bricks and Books: Reinventing the Teaching of Architectural History and Theory

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A B S T R A C T
This paper demonstrates a pedagogical approach for the emerging architect through making, crafting, and reflecting in a contemporary architectural history and theory class. The architecture student is not reduced to a passive listener or observant that must consume a series of lectures week after week. Instead this class establishes an environment inspired by the studio culture, where each student has the opportunity to explore, express, and conclude by physical means while reading and learning. The lectures are reduced to twelve throughout the semester allowing more time for assignments designed to foster an exploration of knowledge embodied in buildings and books. Most history and theory classes would mandate two or three books as required reading throughout the semester. In this class the list was increased twentyfold and it was necessary to find a different pedagogical approach that was methodically innovative and diverse.

Juhani Pallasmaa has written extensively about haptic properties and cognition, redefining our pedagogical approaches when teaching. We need architects that are integrative thinkers - that embrace knowledge, skills, and craftsmanship. Furthermore, history is not a continuous sequence of events. This idea is a construction by the human mind. History is much more fluid and can be seen as arbitrary points in time with different weights, an uneven folded line, or a dimension similar to Heisenberg's uncertainty principle in the theory of quantum mechanics. In this theory space and time are not entities on their own. History is better considered as a field with different points of gravity as opposed to events unfolding in a straight line. This approach allows for a more diverse exploration, creativity, curiosity, and logic reasoning among architecture students.

Starting time for bricks and books: We created two pedagogically challenging assignments that both are leveraging the past by extracting and condensing architectural theory and ideas.

In the first assignment we ask students to create an object in the form of a brick that must represent or be an extract of ideas embodied in a significant building in contemporary architecture. In the second assignment we ask students to read architectural theory and then create a cover for a book of their choice. In this assignment we are asking the student to find core principals of what a book represents in our field. The cover's presence is to be perceived as an observation and understanding of critical thinking applied to their selected author's work. In both assignments students explore the reduction of form to its most simple essence. This immersion process of analysis paired with the reduction of form forces them to reflect outside of the technologically based studio environment. This in particular aids in opening up a discussion and encouraging group based design development. In this way architectural history and theory feedback into the studio environment in a direct immediate manner.

Learning from the Masters: Promoting the Use of Precedent Studies in Building Technology

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A B S T R A C T
A precedent is a preceding occurrence, object, or event that can serve as an example for current or future endeavors. Jeffery Balmer and Michael Swisher discuss the deployment of this device as a learning strategy in architectural education in their book Diagramming the Big Idea. They laud the potential of students studying the built environment, but warn that "[s]ystems of order embedded within works of design are not readily evident to the novice student." To heighten awareness, they "engage beginning designers in the close visual analysis of exemplary building projects—what architects refer to as precedents."[1] All precedents contain lessons that must be drawn from and studied, for "[b]oth evolutionary development and contradictory revolution depend on understanding what has gone before."[2]

Architecture students, especially those moving through the early years of their undergraduate education, need access to more resources and activities that can assist them in understanding the built environment. Although the call for proposals asks how precedents are embedded in studio culture, because the need for understanding is equally important in the technical sequence of architectural education, this proposal relocates the venue of the question to that of a building technology lab. While one could argue that many building technology courses effectively utilize precedents as examples of technical accomplishment or experimentation, how intensive is the engagement between the students and the case studies presented? Is there a depth of examination in addition to a breadth of exposure? With the image of a building becoming more prolific and certainly more accessible through the explosion of photo sharing websites and social media outlets as well as through architectural warehouses that briefly introduce countless projects with minimal technical understanding (if any), how do we steer students towards investigations that probe past the scenographic to the tectonic?

This paper outlines a research project undertaken by a group of second-year architecture and interior design students in a recent introductory building technology course. In this semester-long project, fifteen buildings were investigated by the students – working in small groups – through a series of linked exercises. The process of studying the projects – formal analysis, construction storyboard, wall section, and detail analysis and construction – was rigorous and required the groups to engage their buildings at a number of different scales. The examination was, for each student, narrow, but deep. However, the array of projects, each utilizing different techniques for constructing with wood, provided the entire class with a broad exposure to the potential of utilizing this material in the fabrication of architecture.

1 Jeffrey Balmer and Michael T. Swisher, Diagramming the Big Idea: Methods for Architectural Composition (New York: Routledge, 2013) 7.
2 Simon Unwin, Analysing Architecture, 4th ed. (New York: Routledge, 2014) 5.

Time Forming: Asserting the Element of Time in Art and Design Foundations

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Keywords   Time, Elements and Principles of Design

A B S T R A C T

Historically, form governs and asserts its position as the dominant visual compositional element in Art and Design. All creative steps point to a formal result that serves as both resolution and solution, sparked by a design problem or the desire to communicate an idea. This perennial focus toward an end goal; the defining and identifying of a solution, is being challenged constantly by the rapid pace at which things change today. Technological advancements in mediums for visualizing, fabricating and communicating call for a reconsideration of what we emphasize as we teach our basic skills and language.

Teaching to the Visual Elements and Principles of Design as a foundational premise for organizing ideas related to form undermines the capacity of our design language to facilitate adaptability and active reasoning. Emphasizing an expansion of the sensorial conditions related to our compositional language from the visual to the broader senses (including sound, touch, taste, scent, sensation/intuition) requires a re-ordering of the hierarchy of the Elements. Time becomes the dominant element as form is realized through conditions of time. Space, line, color, texture, light and form are understood most dynamically through the filters of experience and time.

Uncertainty is not only a condition faced when thinking and working toward the distant future. An emphasis on the element of time in the design of course objectives and assignments introduce students to the notion of creating through uncertainty. The introduction of design strategies that embrace and emphasize a process of building ideas rather than building toward a definitive solution is critical to encouraging adaptability. Arguably, re-structuring the hierarchy of Elements, stressing time over form emphasizes the act or performance of design. Performance, collaboration and dynamic conditions must be stressed to activate form and space.

This presentation will demonstrate strategies and ways in which the reframing of the hierarchy found within the Elements and Principles of Design has been explored through experiments, exercises and projects in foundational art and design courses.

Learning from the Craftsmen

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Keywords   Precedence, skills, open-ended

A B S T R A C T

… traces of the storyteller cling to the story the way the handprints of the potter cling to the clay vessel.

In "The Storyteller," Walter Benjamin mused about values of storytelling. He argued that it was similar to craftsmanship, in which they served as a form of knowledge that was shared communally and handed down from one generation to another. Knowledge embedded in crafts and stories always gravitated toward practical interests. However, they offered less of direct answers, but more of stimulations for continuous way-findings to address various situations, hence wisdom. In this way, albeit their communal nature, craftsmanship and storytelling allowed for individual traces to emerge, as storytellers or craftsmen worked out personal touches based on the common knowledge. The knowledge was embedded in them through "gestures trained by work, " hence the tactility of this form of knowledge. Storytelling and craftsmanship shared features of processes that evolved slowly over time and of repetitions of tasks that formed layers of experiences.

The author's institution was known in our region as a school that emphasized on training practical skills in architecture. The challenge was how to work with this agenda at the beginning level without constraining into teaching students with overtly technical abilities, while allowing them to develop mastery of fundamentals in architectural design. The author devised projects based on the hands-on learning of wood carving and joining. It started with long and sustained observations of minute details of surfaces in the environment, through which students documented formal properties that they would transform into three-dimensional artifacts. In this process, the project introduced students to basic tools and techniques of wood-carving and joining. The project set the constraints of the types of wood, the dimensions of the medium, and the range of tools as a way to facilitate the notion of a long, sustained process. Thus, the process was deliberately slow and open-ended, as the progressions were guided by the acquisitions of skills in using tools and handling of materials. The project asked students to reflect and extract findings that they applied to inform the subsequent iterations which grew in scales and complexities, eventually ending with designing a small space.

This paper revisited the use of precedents, focusing on precedents of practices instead of those of monuments or designers. The inquiry probed into the acquisitions and development of knowledge of craftsmen; the lessons of which were translated to engage fundamentals in architectural design. In this line of thought, the inquiry was how do we activate knowledge from making artifacts across the spectrum, not only to construct details, but also to start thinking about space, forms, and programs. This paper documents the pedagogical experiences and reflections of developing knowledge from the process of making things.

Qualitative Assessment of an Accelerated Experiential Learning Using a Phenomenology-based Pedagogy in a Beginning Design Studio

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Keywords   Experiential Learning, Phenomenology, Accelerated Learning

A B S T R A C T

Educators often argue that the studio is a core pedagogy in design education. Its uniqueness is partially attributed to the implementation of experiential and transformative learning practices. The literature, on the other hand, defines experience as a conscious awareness of practices that lead to learning through contemplation, reflection, and iteration. The question that arises is if experiential learning could be delivered in a compressed timeframe. This paper describes a five-week foundation studio that functions as an alternative path to students who did not enroll in the Fall admission cycle. To catch up with their peers, the students need to acquire the necessary skill set in five weeks instead of the whole semester. In addition to improvement of students' graphical and draftsmanship skills, the primary goal of the studio is to introduce and develop basic design skills. Due to the short time frame, the instructors could not fully implement the traditional transformative and experiential design practices based on reiteration and reflections. Since a design studio is not merely a pedagogical mode of delivery but also a formative experience, the students' past familiarities, and cognizances were utilized as a basis for the design exercises. Specifically, suggesting constructivist frameworks to compose a series of spaces through the understanding of the relationship between the human body in space. Consequently, this phenomenological approach was utilized to base the sensibilities of spatial design in an interrelated series of exercises. The first focused on transforming two-dimensional photographs into three-dimensional models. Instructors asked the students to use human figures for scale at first. These figures were used later to emphasize the connections between the created spaces and the body postures explored. The second series involved the transformation of a painting from Richard Diebenkorn's ocean park series into a three-dimensional space. The exercise was intended to engage the students at an intimate personal level. In this spatial transformation, we embedded deliberate and systematic interpretive processes that were further delineated until the phenomenon of occupancy was apprehended. The scale of the painting and the intimacy of the gallery space had a profound effect on attaining this level of appreciation. The closeness to the image as a phenomenon was further transformed into a series of multiple occupiable points of refuge in a construct that amalgamated design with a series of transitional spaces. The outcome represented a rigorous scripting of personal encapsulations of emotional responses translated into a series of interrelated spatial moments representing predetermined experiences. The paper describes in great detail students responses and understandings of the issues addressed. The article further elaborates on the gap between those students who benefited from the experience and those who struggled. The instructors collected data through students interviews and in-studio observations. In addition, the researchers interviewed second-year studio instructors to verify the outcomes of the study. According to these instructors, the students are performing well especially in comparison with their second-year cohorts. The summer students are now indistinguishable from their 15-week peers. Analysis of the results demonstrates that embedding experience to develop an intuitive phenomenological conception of the human body in space is a viable approach to design studio pedagogy in compressed timeframes.

Casting Time: Intention and Temporality

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Keywords   Speed, Uncertainty, Open-Ended, Prescribed Casting Time Intention and Temporality

A B S T R A C T

"How to begin?" That is the fundamental question for those interested in beginning design pedagogy. Is it 2D or 3D? Additive or Subtractive? Prescribed or Open-ended? Simple or Complex? Abstract or Concrete? Answering these questions is pressing, consequential, and relevant. However, the most profound, yet subtle effect on the beginning design student in relation to this question is about the means of production—a process that possesses inherent constraints and opportunities. The means of production can inform designers of the fundamental ways spaces are defined and understanding the pedagogy upholding this is critical. In this paper I describe the pedagogical intentions behind the use of casting as a means of production in introductory design projects. The duration (or lack of immediacy) in the process of casting develops the students' ability to translate/oscillate/switch between positive form and void space, which is fundamental to architectural design.

In this paper I will illustrate the opportunities of casting as a means of production in a studio project developed for a first-semester, first-year graduate studio for students with unrelated backgrounds. Students were asked to develop specific spatial relationships and organizational schemes in an incrementally expanding site through a series of castings. The first series develops the relationship of four platonic orthogonal volumes (primary, secondary and transitional) three of which are positive and the fourth is negative. They cast them as voids in an enclosing volume. In the second series of castings, the students respond to the spatial configuration of the result of the first series. They must follow the logic of the first series, but the process must be reversed—starting with the desired space and then working backwards to develop the required mold.

There are multiple intended effects of this bidirectional process of casting. One effect is the student becoming aware of the reciprocity and plasticity of the relationship between form and space. Prior to casting, the compositional and organizational qualities are legible while spatial relationships are elusive. Through casting students come to understand the space as a result of the formal manipulations. The second effect is to derive formal requirements to support an intended spatial configuration. Students are required to derive the necessary forms that are to be used in the molds to produce the final voids. The third and most important effect is the increased dexterity of the student to translate between solid and void. This is achieved through the student working through the casting process in two directions.

In conclusion, the casting process with its inherent inverse and intermediary artifact (the mold) creates a temporal separation between the student's intent and the final architectonic outcome. This separation shapes the student's ability to comprehend and manipulate the relationship between form and space. This fundamental ability will serves as a foundation for the ongoing development of the students design process.

Single Serial. Accelerated Strategies for Spatial Systems Thinking in the First Year Studio.

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Keywords   Speed, Focus, Open-Ended.

A B S T R A C T

Design takes time. It is a non¬linear, hyper¬complex process that commands rigor, precision, and responsibility as well as empathy, poetry and imagination. Teaching the design process to others for the first time is itself a design challenge.

Researching, ideating, abstracting, developing iterations, thinking critically, constructively critiquing, collaborating, cooperating, editing carefully and understanding the competitive nature of creative disciplines, not to mention basic design vocabulary, tools and communication skills, are all design fundamentals that need to be taught within usually compressed time schedules.

Is it possible to expedite learning without compromising quality?
How might we accelerate a process that requires time for reflection and evolving of ideas?

This paper will present an innovative pedagogy involving accelerated design practices developed for the Basic Design Studio of the Bachelor of Environmental Design Program at UHM School of Architecture and implemented during the Fall 2016-17 semesters.

Time, or timing, is explored in two ways. The first encompassing the design of the sequence of assignments introducing design fundamentals, and developing a single project at once, in the span of a sixteen-week semester. The second, a series of methods and techniques created for accelerating typical design practices for large groups of students applied in single studio sessions.

A framework was designed to guide students through a series of independent, yet sequential exercises that encouraged the development of a coherent body of work, in spite of divergent explorations and/or creative failures. A series of rigorous but abstract exercises: Serial Compositions, Volumetric Explorations, Inhabitable Adaptations and Interconnected Environments, focused on systems thinking and served as generative devices for finding a design language.

Design activities such as Charrettes, Competitions, Do¬Tanks, and Speed¬ Networking Sessions were re¬imagined and adapted to the super studio environment (1 to 80 professor-student ratio and 1 to 20 teaching assistant-student ratio).

Serial Compositions focused on the fundamentals of geometric composition in two dimensions. A series of abstract drawings explored ideas of form, space, and order using basic geometric constructions. A set of nine drawings facilitated conversations about logic, operations, iterations, craftsmanship and relationships between both elements and space, and successions of drawings.

Spatial Explorations centered on the study of spatial systems composed of basic three-dimensional geometric forms. Space was explored through a series of models constructed with the primary elements of form (point, line, plane, volume), using varied processes of transformation (dimensional, additive, subtractive) and materials (basswood sticks, chipboard and cardboard). Sequences evolved into hybrid solutions and allowed discussions on repetition/ variations, iterations, connections between elements, aggregation, and relationship to established boundaries.

Inhabitable Adaptations was an exercise in both visual communication and conceptual development. Previous studies were utilized to learn basic concepts of representation, while exploring what it means to design for human scale.

Interconnected Environments challenged the students with translations and further adaptations, as context was added to the complexities of the design process. Spatial systems were developed and designed to operate between the city and the beach, a common threshold in the environment of Honolulu, a dense urban environment on an island.

Kaleidoscopotorium : Redefining the Anatomical Relations of Surface + Installation in the Focus of Temporal Study

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A B S T R A C T

1.The eye, hand, and paper comprise the oldest cooperative of surface and installation. They are cataloguing impressionists working in a cyclical directive: the eye collects the observed by demarcating the surfaces of phenomena; the collected matter channel from tactile thought, tangent partner-tools of the hand and pencil, onto archival surfaces. This process creates net that "shift -sifts" assembled experiences into the installed observatorium of place and being. In essence, it is the collective of points of time. 2.This surface ->installation establishes two types of disconnections. First it severs the viewer from tangible curiosity and manipulation of causal limits; 3.The creative, or student, is the soloist of this tactile thought. Often Surface -> installation confines phenomena to linear narratives– marked points of present time. This contrasts the natural web of non-linear contemplative evolution. 4.This proposal aims to reconfigure or reinvent the eye-to-hand-to-observed relationship of viewer to ephemeral points. The intent is the creation of kaleidoscope drawings, structured by a sub-surface receptacle, the paper, and a super-surface lens of constructive or deconstructive material. The super-surface directly reconnects the hand-to-eye relationship for the viewer. 5.Rotating the lens, shift, the viewer becomes the creator and collector. The lens acts as the catalyst of infinite drawings through additive or reductive processes. 6.The result is infinite creation of collective time, past+present+future, and decomposition of the typical observatoriums of place and being. Coinciding with the act of shift is sift, where the mirrored states of construction and deconstruction expose layers of time. The sift-shift redefines the act of drawing and manifests in the tool of surface+installation. This tool allows the creative to act as the architect of time.

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Social Sustainability Factors in Urban Design Practive

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A B S T R A C T

Social sustainability is a vast and important aspect of sustainability, which has a direct impact on human life. As various studies have discussed, physical environment that accommodates social sustainability promotes physical and mental health, economic and environmental values, and social goals. However, there is a lack of understanding diverse dimensions of social sustainability from an urban designer's perspective. This study emphasizes the significance of socio-cultural dimension of sustainability in urban design practice.

This study first explores values of social sustainability discussed in urban design and planning literature and identify key concepts of social sustainability in an urban context. This study then provides an index that measures diverse dimensions of social sustainability. This framework will help urban designers and planners understand the complex nature of social sustainability and evaluate the urban-scale project by applying the factors of social sustainability. The paper also demonstrates how to apply the index to measure social sustainability in urban design projects.

'The _torium. A non Googleable studio.'

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Keywords   Typology, Precedent, Pedagogy

A B S T R A C T

Architecture in the media used to be different. Before works of design would be included in the pages of a magazine or journal, the editorial review board juried the work for the same issues many architects and academy faculty members may recognize: success relevant to site, program, technology, design fundamentals, and theory. Architecture presented in the pages of publications were in turn poured over by readers, studied, evaluated again, and considered. Publications received well-written letters in support, or critical of, the works presented and this was the foundation of architectural history and precedent.

Well documented, the internet changed all consumption of history and precedent. But very little literature exists discussing the benefits – and perils – of the use of the internet in architecture education. The common supposition is that promotion of architecture through imagery alone is damaging the education process of architecture students as they now think of design analysis and research as the process of a quick internet search, rather than an in-depth investigation.

The architecture examples now returned through search terms are not curated; every search term returns only that for which you went searching. Rather than opposing, or prohibiting the student's instincts to gravitate to the internet, a jiu-jitsu methodology is employed as only non-Googleable project typologies are assigned, prohibiting internet results from which they copy/paste concepts, material strategies, and site relationships. Because the project begins with terms that have no search results, they must rely on individual design agendas.

'The _torium' is a provocative project that attempts to uncover a representational language of architecture that allows both the programmatic and typological expectations of architectural space to coexist with equal significance. For the last three years the studio has been purposefully designed in the pursuit of this agenda through _torium styled projects, e.g. Narratorium, Chrono-torium, Spectorium. To a large extent, the building type does not align with traditional programmatic elements, and therefore not discoverable on the internet. Additionally, since a _torium is not Googleable no mental models will impede the student's personal development throughout the term. Illustrating their approach, the paper will present student work with in depth research on how narrative, personal design philosophy, visualization, and innovation in design shape an understanding of the built environment by beginning with that which we do not know.

When perusing the internet, the student is only looking at photographs as a result of their search term and not considering the more nuanced aspects of architectural design. Upon studio project assignment of known building types students gather precedent examples that are the results of search terms. If nonexistent building types are assigned students gather precedent examples that are the results of personal design agendas.

No one would argue or dispute how necessary the internet has become for architecture and design education; it is now essential for architectural research and teaching. By teaching students to look for that which the search engine will not provide, we teach better manners of critical investigation into history and precedent.

Examining the Value in Single-Purpose and Multipurpose Designed Interior Environments Through Pedagogical Strategies Related to the Manipulation of Time**

Panelist/
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Keywords   Community, Chaos, Finite

The Partnership for Aging with Autism Research Core (PAARC) is a transdisciplinary core of designers and researchers from Rehabilitation Research and Training, Gerontology and Interior Design. The PAARC committee project goals included:

- to design a multi-purpose space that supports the best-practice programming developed by PAARC which addressed independence, stress reduction, communication, special engagement and leisure skills to create an environment which maximizes the capacity to achieve the best quality of life possible for the clients of A Grace Place
- to develop design strategies specific to the activities of art, cooking, gardening, and music
- to provide spaces of community and spaces of privacy within the overall multipurpose space
- to design ancillary spaces for AGP staff that are both efficient (for task-related duties), and restorative (for short breaks and personal business)

As part of a broader research effort, PAARC invited Interior Design faculty to craft an academic studio project that would engage interior design students with these project goals. This invitation yielded a studio project examining the value in, and consequences of, single-purpose and multipurpose designed interior environments through various pedagogical strategies related to the manipulation of time. These manipulations took the forms of abbreviated, design charrettes and extended, independent work. The academic studio project goals included:

- to understand the values in and consequences of single-purpose and multipurpose designed interior environments
- to understand the challenges and opportunities in designing for clients with autism and healthcare professionals and care providers

The pedagogical framework directed students to begin the studio project by working through design charrettes as teams. Once the five short-time charrettes were completed, students entered into a phase of independent work. The charrettes were designed to focus work on single-purpose investigations dealing with singular programmatic activities stemming from the PAARC project goals. The five single-purpose investigations were cooking, gardening, music, art, and sensory props. By focusing solely on one programmatic activity, and by working in teams, project variables created focus (subject) and chaos (multiple perspectives and strategies) within an abbreviated period of time (one week). The independent work was designed to focus work on multi-purpose investigations dealing with a number of programmatic activities stemming from the PAARC goals. By widening the focus, narrowing the chaos, and extending the period of time students had to complete the challenge, the impacts of these variables on quality of work was better understood. Investigations were measured by student-generated deliverables including models and drawings speaking to concept and strategy as well as drafted architectural strategies for an actual interior environment within A Grace Place - the existing adult care center. Project deliverables were recorded for use by PAARC team members and also provided to the director of A Grace Place.

Hurry up and Refresh: Jockeying Pace and Overlaps in Beginning Design

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Keywords   Speed, Present, Beginning

A B S T R A C T

We find ourselves at a moment where image is everything and everything is fleeting. Not long ago an architectural cynic could pose that when it comes down to it, any newly christened building needs to generate only five good photographs to claim its fifteen minutes of fame. If a handful of images could perhaps be enough to capture the soul of a project, it is worth noting that this year alone it is projected that the number of photographs taken globally will top 1.3 trillion with more than seventy-five percent of these images being recorded via a smartphone. Optically inundated and constantly connected, our collectively attention span is waning at best if not (hold on let me check my phone) more critically impaired. How do we instill grit in beginning design students as we educate and prepare them for the relative glacial pace of design and the realization of projects when compared with the immediacy of our everyday social milieu? #alternatetimescales

Nearly twenty years ago the architects Tod Williams and Billie Tsien wrote an essay lamenting the increased expediency in architectural practice and the value their firm found in the slowness of method, design, and perception. Near the essay's conclusion, Williams and Tsien convey: "As our work matures, the perception of it is less and less understandable through photographs. One can only understand it by being there and moving and staying still." While there is no going back to the days of ink on mylar and the Xerox, it is nonetheless a worthwhile endeavor to reexamine speed and the three aforementioned topics in the context of contemporary pedagogy.

This paper explores how we as academics can facilitate the pacing and critical overlaps of instruction across courses, to not only get beginning design students rapidly up speed but also pause to allow for moments of meaningful self-reflection and insight. Utilizing analog and digital methods from the simultaneous instruction of a first architectural studio and a fundamentals of digital computation course, design themes of iteration, legibility, and reinforcing concurrent curriculum will be discussed as well as issues of perception related to having students embracing uncertainty and fostering self critic.

Seeing Multiples

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A B S T R A C T
James Elkins calculates that it took him a cumulative total of almost 3 years to see Mondrian's Lozenge Composition with Yellow, Black, Blue, Red, and Gray – a painting that, as an art historian, he was quite familiar with before beginning his exercise in looking. He writes, "I want to gently undermine the idea that there's nothing to be said about seeing because it's easy, automatic, and natural." For Elkins, seeing the Mondrian required both a commitment to an extended period of study and a willingness to un-know his educated biases concerning the work. In Ways of Seeing, John Berger further argues seeing can never be separated from what we know or what we believe. What we see is contextual, cultural, situational, and open to change. Assumptions and preconceptions must give way to the construction of multiple and co-evolving vantage points – constellations over singular instances of inquiry. For the foundation design student, seeing means both sitting within their diversity of life experiences, and also leaping headfirst into strange new landscapes of disciplinary limits and possibilities.

The Design Foundations Studio uses reciprocal experiments in making to uncover the generative potential in extended exercises in seeing. Beginning with something/someone/someplace familiar, the student is asked to gain a new familiarity through sustained interrogation and looking through an unfamiliar lens. No single media or means of inquiry is given preference. The goal is simply to notice what they hadn't before.

A series of sketches made with a pen grasped with a strange or even uncomfortable grip are used to reveal the hidden internal structure, logic, or character of a favorite personal article. Shifting to observed fragments of daily rituals, pencil line, watercolor wash, and charcoal erasure become modes for understanding the inherent qualities and potentials of ubiquitous objects and situations. Adding movement from drawing media to modeling media and back again – the student makes and remakes with a focus on the discovery of unique strategies and techniques for seeing. As they work to translate their observations, the process becomes an immersion into varied techniques of making delimited by their own newly discovered sets of material logics and limits. Finally, the student is asked to see him or herself. Reflecting on the postures, actions, and behaviors they associate with retreat, the student composes programmatic requirements for the design of a territory for aloneness and respite. Acknowledging the fluidity of self-awareness, Joseph Rykwert writes, "Every moment of perception contains a whole personal and collective past, our body is the incarnation of that past; and with every moment of perception this past is reordered and revalued." Immersed in the design culture and community of the studio and reflected through the limits of the exercise, its critique, and assessment, the problem of temporal seeing becomes both conflated and expansive.

Metrical Devices | iteration o1 : Temporal Constructs

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A B S T R A C T
Time
The steady staccato of its hours, minutes, and seconds mark a tempo, an experiential metronome. We take the metrics of time for granted, an absolute. In our daily lives it manifests with universal acceptance despite its manifold natural and artificial expressions; collectively we conceptualize a steady, linear flow.

Throughout history, the measurement and conceptualization of time has evolved through connections to our bodies, the cosmos, and the history of ideas. The sundial, astronomy, long count, lunar and Gregorian calendars, the hourglass and cuckoo clock, time has been understood through a multitude of units and markers. What would happen if we were to question not the existence of time, but the metrics? How does the measurement of time shape our experience of it? What are the implications of alternative measurement schemes? What are the spatial potentials of reinterpreted or newly imagined temporal metrics?

Design Devices
If we approach design as an assembly of acts, with both conceptual and physical elements, it becomes something more akin to a device. As an apprentice often begins by building the tool they will use to ply their trade, this device outlines a production. It provides an explicit framework that defines scope and delineates constraints. It also grounds the process, creating points of registration enabling assessment and modification.

Points of departure reference works by Marcel Duchamp (3 standard Stoppages), John Cage (Ryoanji), Lebbeus Woods (Metrical Instruments),and Kevin Lynch (What time is this place)

Temporal Metrics
This paper studies the implications of treating architecture as a device that reveals the presence of time. A nontraditional temporal metric is developed and explored spatially through drawing exercises leading to the design and fabrication of a Metrical Device.

Beginning with a dismantling of the time-construct, comparative precedent studies are undertaken through the lens of temporal experience. How can we interpret the experience of Mies' Brick Country House through a relativistic aberration or the narrative structure of Christopher Nolan's Memento?

Each of these project project elements expose time as an intellectual construct and create a framework for grappling with fundamental questions pertaining to the fluidity of experiencing space- not as a moment, but as a fluid and dynamic experience existing over time. Collage based techniques encourage hybrid approaches to drawing and modeling that blur the lines between conventional production techniques. Each product is considered at the level of the detail as print, paint, and ink are layered with, laser cut and 3d printed components in synthetic assemblies. The project culminates with a highly crafted material/tectonic construct.

Through its manifestation as both a conceptual and physical construct, the Metrical Device asks the designer and (experiencer) to [re]consider our individual and collective experience of time. Explorations include bending temporal trajectories, nonlinear narrative frameworks, non-solar temporal algorithms, simultaneous time, layered time, time/material relationships, decanted time, temporal expansion and contraction, and implicit histories.

Games and Storytelling for Design Foundations

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A B S T R A C T
Today a great deal of our lives has been co-opted by games for either entertainment purposes or as a function of the societal marketplace. Whether we are playing a game of Catan at the table or acquiring points for brushing our teeth with a new electric toothbrush that tracks user input and rewards us through an app with even more merchandise, the gamification of our daily routines and the narratives that are designed to support them is immense. When considering the impact that games have on our day-to-day activities, Game Design and Sto-

rytelling are natural points of departure when teaching Design Foundations to a generalized audience of beginning students with evolving interests in the design of spaces and objects, as well as digital, print and time-based communication projects. Because of the diversity of the students' interests, our goal is not to teach game design per se, but to contextualize foundational knowledge through a 'playful' process that students already engage in (and are engaged by) every day. Game Design and Storytelling also serve as useful vehicles for meeting our primary course objective: a collaborative application of visual feedback to interactive, spatial, temporal, and experiential media. These shared experiences (and in particular the development of them) both accelerated and enhanced student learning in our classroom while yielding a high level of engagement that was critical to its success.

This visualization course for design foundations is organized to maximize the use of games as a medium and storytelling as a vehicle to contextualize content and articulate vision. More than a decade of experience in the 3D animation and video game industries informed the instructors about how to make the most of what these types of practices have to offer beginning design students.

The course was designed to include a series of progressively complex assignments that focused on storyboarding and color keys, character design, and game design and provided compelling opportunities for students to build their design skills in the areas of visualization, collaboration, and iteration. By situating the learning objectives in the context of products and activities that students seek out and engage as part of their everyday lives (and by focusing on play and making it fun), we observed that student investment of effort in skill development and critical thinking advanced in a successful and significant way. This presentation will analyze a series of student outcomes from the cumulative course curriculum and it will discuss the successes and areas for improvement that were discovered.

Almost Natural: A Teaching Pedagogy in the Face of Climate Change

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Keywords Sustainability, Technology, Future

A B S T R A C T
The paper presents a teaching pedagogy titled Almost Natural. This teaching pedagogy aims rethink how most contemporary undergraduate architecture education teaches about nature and its role within the discipline at a time of increasing climate change. This teaching pedagogy finds its theoretical underpinning in the work of environmental sociologist William Freudenburg who argues for the blurring of the boundaries between the physical (i.e. natural) and the social (i.e. human-made) in what he refers to as an inherent conjoined constitution between nature and society. At its root, this teaching pedagogy rejects how teaching about nature as a byproduct of the hegemony of a crumbling nature/culture binary seems irrelevant and dangerous at a time of increasing climate change.

The paper is structured in three key parts. First, it surveys the various ways in which typical North American undergraduate architecture curriculums teach about nature and the environment. This is discussed through looking at these modes of teaching about nature and the environment through understanding how they have come about because of the relationship between academia, accrediting boards (i.e. NAAB) and registration boards (i.e. NCARB).

Second, the paper describes the theoretical framework that underpins the teaching pedagogy. This occurs through positioning William Freudenburg's work on an archaic and crumbling nature/culture binary within an architectural context. Freudenburg describes multiple kinds of relationships between nature and culture until he reaches his thesis of an inherent conjoined constitution between nature and culture. Freudenburg's categories are looked at in detail through an architectural lens, finally arriving at a thesis that succinctly describes the teaching pedagogy.

Third, the paper describes how the teaching pedagogy is deployed in its different course types, ranging from design studios across multiple year levels, seminar courses, digital design courses and senior independent research courses. Here, the proposed paper describes the nuances that must occur given each different teaching venue, while still maintaining an overall cohesive agenda. The paper concludes with examples of the resultant student work. In general, the student work interrogates the disruption of nature-synthetic binary in the Anthropocene through the lens of computational design methodologies and non-linear fabrication techniques. This results in student work that puts into practice the thesis on Almost Natural conditions laid out in the preceding section through upending traditional geometric hierarchies, pattern driven part-to-whole relationships and precision in making in favor of work that exhibits an extreme blurring between natural and synthetic materials and conditions and textural, painterly, gestural and misfit assemblies.

Clarification of relevance to conference theme of TIME:
This paper responds to the three subthemes of Starting Time (Leveraging the Past), Taking Time (Focusing on the Present) and Shaping Time (Imagining the Future) through understanding how the recent past history that has solidified how most contemporary undergraduate architecture education teaches about nature and the environment. After taking stock of the recent past and the present condition, the paper imagines a wholly achievable future of architectural education with a specific focus on the role of nature and the environment in this education that produces adaptable young architects capable of a radical and relevant form of architectural production in the face of climate change.

Virtual Reality and Augmented Reality in the Architectural Design Education

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Keywords Future, Media, Technology

A B S T R A C T
The virtual reality (VR) and augmented reality (AR) industry are one of the quickest growing technology-intense industries boosted by the latest innovations of hardware and software. New human-computer interaction is pushing the user experience to a new level. VR & AR based media has blurred the line between reality and virtual. Especially with the recent availability of smart glasses, AR-ready mobile phones, and Microsoft HoloLens, VR headset such as Oculus Rift, HTC Vive, as well as open source developer tools, the interactive technology is reintroduced as the new visualization instrument into the design education.

This paper explores teaching both VR & AR technology for design communication, and its applications in the architectural design studios at the School of Architecture and Interior Design, University of Cincinnati. The author explored various process to integrate VR & AR in the architectural design curriculum. This paper presented both technologies and discussed their effectiveness of communication, user interface, and sensory-motor experience. In the studio, the faculty taught students how to build AR and VR system including a desktop computer, Oculus Rift, and Microsoft HoloLens. The students learned how to use Unreal and Unity game engines to explore their building models in real time.

The author then discusses how to integrate VR & AR into the design timeline and accelerate the studio workflow. The teaching has been focused on using these new tools in the architectural design process, where sensory-intensive, immersive experience would facilitate quick design decisions. VR & AR integrate site survey, concept evaluation, schematic design, and virtual construction. It allows a proposed space to be generated, visualized and shared quickly. This new feedback loop enabled us to incorporate both technologies as new means of communication. The paper also discussed how to teach students to develop visualizations and use them to augment their traditional workflow. Students learned how to add voice and gesture control and output the stereoscopic display and panorama animations. They quickly implemented their newly acquired skills to the studio projects.

At the end of this paper, we discussed the benefits as well as some constraints in our teaching module. We believe the VR & AR should be promoted and used in education to provide sensory experience and create a sense of reality. More importantly, it should become a playground which will allow students to explore, discover, evaluate and improve their design.

Embracing Imagination and Uncertainty in Initiating Creative Thinking in Beginning Design

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Keywords Uncertainty, Beginning, Imagination,

A B S T R A C T
Changing a person's way of thinking is a difficult aspect of teaching design. To think creatively first requires transformation of the person wishing to be creative. Learning to be creative directly enables student self-development. As design students first engage in the iterative processes of creativity and make decisions to facilitate creative transformations, this, in turn, effects transformation of the person being creative as they encounter uncertainties, find direction, connect with materials, and realize the self. But how to initiate creative thinking in students who may think otherwise, especially within institutions that discourage or are indifferent to inventive or imaginative thinking? Research indicates that creativity requires constant shifting between divergent thinking (creative) and convergent thinking (critical) to generate alternative ideas and then purposely, imaginatively merge them into the most com-

pelling outcomes. Learning creativity also means to encounter uncertainty as a threshold experience and overcome the preconception that creativity results only from talent or intuition. This presentation mines creativity research to take a position that creativity can be learned if prompted in ways that encounter uncertainties in ways that transform mis-conceptions and non-creative modes of working into forms of creative engagement.

I will also demonstrate three short duration hands-on design exercises I use in beginning design courses that utilize inexpensive everyday materials, and take form through direct experiential learning. These exercises self-demonstrate transformative lessons to design students: that imaginative sources of creative ideation are already within us, in the form of exploration, visualization, iteration, and reflection, and that relations between knowledge and action in design can transform uncertainties, misperceptions, and non-creative modes of working that thwart creative thinking. Exercises open issues of creative design inquiry and possibilities at the outset of a design problem, identify and act on material potential, and expose the relation of workmanship to design. Group critique is critical component of the exercise process in demonstrating that multiple points of view are necessary to creativity. Exercises are described below:

Exercise 1. *place for a rock (uses only a rock and 36" tie-wire) – Make an orderly support for a rock, one 'fist' from the table surface. Demonstrates that the sources of creative ideas are already within each of us, in the form of playful exploration and visualization within acts of iteration and thoughtful reflection. Comparative critique demonstrates multiple inroads to critical design review.*

Exercise 2. *black and white paper exercise (uses only glue and one black paper half the area of a white paper) - Tear black paper into 12 pieces and glue these pieces onto white paper with no overlap. Exercise demonstrates that creative activity begins with defining what is and is not possible and, importantly, by having an idea.*

Exercise 3. *Pencil stand exercise (uses only copy paper) – Make a stand for your pencil out of paper onto which you have just written everything you know about paper. Demonstrates the relation between knowledge and action in design and in so doing defeats presumptions that stand between creative thinking and the deterministic thinking that thwarts creative thinking.*

Learning Through Making: Accounting for Variable Experience in Beginning Design Students

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Keywords Learning Through Making, Hands-on, Process

A B S T R A C T
Constructivist learning theory suggests that individuals and society construct knowledge through experience, experimentation, observation, and reflection. Paramount to this reading of learning is that experience precedes the production of knowledge. Individual students, given their varied backgrounds, will bring a multiplicity of solutions, gleaned from their lived experiences, to any design problem posed. Doing, making, or building occurs as the initial exploratory steps in the learning cycle. These hands-on exercises, require little to no preexisting knowledge of tectonics, environmental systems, structural strategies, or architectural theories. Therefore, through testing, failure, and re-testing an understanding of these architectural concepts can be built around a methodological process rather than an ideological preconception.

The hands-on testing of ideas against an architectural polemic causes the student to reevaluate the problem at hand through the lens of their own experience as well as their preconceived understanding of that experience. This approach to the beginning design education allows for and encourages various levels of skill on the part of the student. The hands-on exercise results in a physical and testable artifact that students can evaluate through criteria that is guided by the instructor but ultimately defined by the questions that the student is asking. Thus, the knowledge brought by the student is of the upmost importance. A student with a mathematics background will bring a different eye to an architectural problem than someone who has had a performing arts education. This approach embraces the richness of a student's own life as a tool with which to differentiate design rather than flatten the work of a student body to a uniform product or set of questions.

Through a case study of three assignments taught at various institutions, by various instructors, this research seeks to develop and collect a pedagogy of architectural learning that begins with hands on making. Each assignment has its own focus: tectonics, structure, and thermal performance. The goal of this research is to develop a pedagogy that brings early students closer to the material realities that underlie all our design decisions and architectural practice.

designer2maker: a Timeline for Concept Generation and Translation

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Keywords Beginning, imagination, skills.

A B S T R A C T
External reviewers, guest critics, and advising practitioners often reference the ability to develop and apply appropriate design concepts as a marketable design skill, and they demand evidence of their application in design student projects.

Research on creativity defines design concept as the overarching idea—formulated in the early stages of design—driving the function and form of the product, and critically impacting the numerous decisions that follow throughout the design process timeline. Research also describes the emergence of a design concept as the sudden, often uncontrollable and sometimes elusive result of a leap of imagination, making concept generation problematic. Even after conceptualizing their designs, usually based on inspirational precedent images, beginning students struggle to transfer the desired ideas into actionable spatial patterns. How can beginning students gain an understanding of the chronological sequence whereby ideas become designed objects? How do they understand not just the method, but its temporal dimension? The designer2maker project, evolved and successfully implemented in three design programs over five decades, is presented as a systematic method for easing this process.

designer2maker encourages ideation, conceptualization and analysis skills as well as synthesis and translation of results to conceptually consistent 2- and 3-D products and a spatial experience evocative of each student's individual precedent over the time-span of 15 weeks. The concentrated process entails a sequence of activities associated with five distinct exercises of increasing complexity, building up to a comprehensive learning experience that combines analog and digital technologies for visual representation and fabrication along the following timeline:

ONE. Study of an assigned abstract painting: artwork and artist background/context, artwork concept and perceived meaning/emotional content.

TWO. Study of the painting's design composition—organizational pattern, design principles, lines, shapes, and implied forms observed and traced from the original painting; study of its color palette, texture, and suggested illumination and materiality; representation in a color separation chart.

THREE. Manipulation and recombination of the previously derived design principles and elements to create a textile pattern with corresponding tile repeats for interior surface applications.

FOUR. Use of previous 2-D combinations as a point of departure for developing a sculptural object referenced to the original painting. Move from drawn 3-D compositions to white study models and to small sculpture made with conceptually consistent materials.

FIVE. Design of an art gallery space exhibiting the original painting as well as the designed textile and sculpture. Emphasis on creating a series of connected spatial experiences, defining circulation and pauses, focal points, indoor-outdoor relationships, and vertical integration.

Final project deliverables collect the outcomes from all preceding exercises. Along its arc, the project has introduced students a range of skills, technologies and tools: manual sketching and rendering, digital drawing, rendering, and board composition; professional lighting and photography, photo editing, canvas printing, scale model making, laser cutting, 3-D modeling; and material cutting, carving and assembly using woodshop equipment. At its conclusion, students have engaged in sequential creative processes where they have practiced concept development and a method and timeline for its translation to diverse design products.

Visual Graphics and Digital Fabrication: The Linking Strategy to Teach Design Grammar

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A B S T R A C T

In architecture, we cannot teach design, but can teach its principles. The recent trend seems to be parting from this notion and striving for tool-dependent learning. Design thinking in some instances is left to digital software parameters and processes of fabrication.

It is noticeable that the current trends of design education at various institutions are leaning towards the creation of forms that are dependent on ability of digital application rather than incorporation of principles of design, associated visual grammar, and aspects of other design forces such as program, site, environment, etc. In many instances students seem to gravitate to pattern-making and complex form-making that are generated through digital applications. Such methods lack both understanding of visual grammar, detailing of reality, and iteration of 3-d composition of spaces.

With current dynamic changes in the learning system, learning process, social values, and evolving digital means, the design studio pedagogy is now more susceptible to questions and reformation more than ever.

Apart from criticism of studio teaching, a major change in the overall architectural education that already took place is in the area of design (graphic) communication teaching. After more than two decade's argument, it is now clear that the role of hand drawing and its implication in design visualization is progressively diminishing in the formal curriculum. On the other hand, a noticeable emergence of courses in areas of digital fabrication, sustainable environment, and robotics has become evident in many curriculums.

Concurrently, the new generations of educators see courses in graphics as an opportunity to introduce various digital tools such as fabrication, analysis, simulation, etc. to replace manual graphics and tactile design thinking. It is not rare to see even the integration of robotics in beginning studios. Often the research conducted in doctoral works by many young educators seems to be reflected in their beginning studio teaching without much reference to overall learning goals.

With the availability of digital software and hardware, in particular 3D applications in combination with laser cutters, 3D printers, and CNC routers, unlimited opportunities are available to explore design principles that encompass architecture, product design, and fine arts. In reality we do have more tools to teach visual design principles in architecture more than ever before.

The primary objective of this paper is to demonstrate the possibility of teaching design principles through a series of artifacts that have strong graphic application as well as use of digital technology for fabrication. With the primary objective of linking art and architecture and use of technology an elective course was introduced by the author. Assigned projects included, design of dinnerware, pair of sandals, 3D wall art, painting based on built environment motif, working clock, and working lamp. The paper intends to demonstrate that execution of a design task and its assembly-fabrication using manual and digital equipment through projects that are not necessarily architecture and do not have complex tangents of site, climate, program, etc. The central theme being visual grammar, each project dealt with specific tangents of visual design principles.

Clarification of relevance to conference theme of TIME
The decline of design grammar during the rise of digital fabrication era is an issue of current time. This paper looks at possibilities of reinstating visual design grammar in current application trends of digital tools.

Fragile Versus Agile Mind-sets in 1st Year Design Teaching

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A B S T R A C T

Do 'traditional' creative skills need to be preserved when we bring creative business and management studies into design schools?

My teaching ethos aims to transfer learning over from a basic dualism to the relativism of contextualised knowledge. However, this adoption process is not linear: Students are arriving from an increasingly varied Higher Educational world – Internationalisation of admissions and detachment of academic staff from applicant interview process will mean that it is even more important to avoid the institutional trap of assuming that all students arrive with dualism as their core thought process – as we are aware, there are hidden creative talents in our 1st year students, however, these can be shrouded by the need to follow business and management protocol, even though we understand the need for design thinking, lateral thinking, emotional intelligence et al.

Biggs' extension of Dunkin and Biddle's (1974) of the 3P model of learning into a workable 3P system was an early awakening point of reference to the communal contributing factors in teaching that result in the common goal of learning outcomes that we are expected to deliver. I propose to take this model on board and apply commentary taken from a vignette in a chapter on teaching and learning regimes deconstructed in Cultures and Change in Higher Education (Trowler 2008). This is of particular relevance in the area where Trowler discusses communities of practice, (attributed to Wenger 1998) - whereby bystanders are brought to the fore in supporting learning, in this case, a lecturer from a discipline that is related via the Design School, but has long established career experience in pre-degree art and design foundation teaching and also a current remit teaching core skills to spatial design students.

Using empirical research, we aim to conduct a healthy debate around basic dualism to relativism in design management academic practice: A discussion based on 'thinking is doing' and how to best serve business orientated students in a creative climate. I will be inviting my colleague, Gregory Messiah into a freshly instigated series of teaching sessions with my 1st-year students. We are a design management course that falls between vocational practice and theory, how will the addition of further creative core skills benefit my students? Is there a correlation between students that are taught a range of drawing skills and further confidence in understanding the link between strategy, leadership and management? What are the future avenues for development in teaching core 'traditional' creative skills to widened design school courses?

I will be conducting a series of 8 teaching sessions between January and March 2018, where the core skill of drawing or 'speaking with your mouth shut' (Mace 2017) will be brought to the fore. I will be reporting back on our findings with qualitative analysis during the NCBDS 2018 conference.

Leveraging Diversity in the Studio Classroom: Helping Beginning Design Students Draw on Their Own Histories to Develop Unique Approaches to Making and Learning

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A B S T R A C T

Beginning design education should celebrate the diversity of the students in the classroom. It is essential that first-year graphic design students are not merely trained in design fundamentals but are also exposed to content and concept development that goes beyond responding to outcome-oriented assignment briefs or following conventions of Western design precedents. Diversity can be cultivated in studio courses by creating curriculum that embraces experiential and open-ended projects—projects where students learn by doing, sharing, and by discovering what a project outcome could be rather than being told what it should be. Kolb explains experiential learning as when experiences are had, understood, and are transformed into knowledge (Kolb, p. 41). Each individual experiences situations, activities, and environments differently depending on their culture and background, and if permissible will utilize their individuality in the classroom and to inform their making.

This paper argues that to focus only on the fundamentals and precedents may limit the beginning design student to a finite, predictable, and culturally limited view of what design is. Such restricted curriculum also risks the erasure of what the students bring to the classroom—diverse perspectives and years of unique experiences. Fundamentals and precedents should be seen as a starting point in an education that sees students and faculty questioning, pushing against, and possibly even rejecting the past. This approach to design education can stimulate a rich and rigorous environment of empirical research and self-reflection.

Curriculum that cultivates diverse approaches to assignments incites learning from and with both faculty and students—unlike top-down learning, which occurs through the traditional Western archetype of teacher as master. This paper will discuss 1) the tools: such as scaffolding and writing exercises that can be used to support a less hierarchical, more experiential curriculum that allows for students to call on their past and draw from their cultural backgrounds to inform their making, 2) the challenges that both students and faculty face when engaging in this type of curriculum, and ways to mitigate them 3) a case study: a sample assignment and student work from a first-year undergraduate graphic design studio course.

Time plays a vital role in shaping individuals. The classroom should be a safe space for experiences and cultural backgrounds to be expressed and not obscured by Western dogma. Not only will this create a richer environment for learning but may also cultivate students who have a better understanding of and more empathy for others.

Kolb, D. A. (1984). Experiential Learning: Experience as the Source of Learning and Development. New Jersey: Prentice-Hall.

Design-Building Empathy: Small Scale Academic Design-Build

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Keywords Experience, Precedent, Technology

A B S T R A C T

One of the most effective educational methods for building empathy with the making process is for design students to physically make their designs. In design-build education, students engage with construction logistics and learn about the influences that designing and making have on one another. Students experience challenges such as the frustrations and choices associated with working with materials that do not always cooperate, consultants, vendors, machinery that does not always work, delays, budgetary and deadline constraints.

This paper presents a project which avoids common hurdles to academic design-build such as semester schedule, client expectations and unconstrained budgets while providing students with many of its benefits. "Deploy: Transformable Privacy Screens" jumpstarts the design process by reverse-engineering a case study; pairing the project with technical lessons on drawing and fabrication; and limits full-scale construction to a portion of the overall design.

Within a short six-week time frame students apply introductory level technical drawing and fabrication skills to designing a deployable privacy screen. Students work in pairs to reverse engineer a historical architectural screen precedent to initially practice their technical drawing skills and extract a design concept that is then developed for their own design proposals. Precedents are pre-selected to a shortlist for the student pairs to select from. The precedent analysis aids the fluid development of technical skills and a design concept in a short time frame. Students make a full scale detail from their overall design which includes prototyping, material sourcing, consulting with craftspeople, full scale fabrication, assembly and finishing. Students are exposed to digital fabrication software and machinery which enables complex geometric patterns to be fabricated in a relatively short time frame.

Students focus on key objectives: understanding historical precedent analysis, technical skill-building, and design concept generation while experiencing both design and production. Through the act of making their designs students learn how to deal with failure (design/production, trial/error) and make adjustments to the design to deliver a product on a deadline. Teaching students using design-build pedagogy, even at a small scale, builds empathy for the making process and leads to enhanced understanding of the relationships between designing and making.

Inciting Criticality in Design Educaiton: How We Teach History to Design Students

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Keywords Design Education, Pedagogy, Critical Studies

A B S T R A C T

In the United States, undergraduate design education has many components to its curricula, which aims to impart on the young student different learning objectives, such as problem solving, formal composition, design research, various materials and processes, technical knowledge, an understanding of historical and contemporary styles, and critical thinking. Included in these curriculums is design history (sometimes art history) and is considered essential for the practitioner, revealing social and political contexts in which design is produced, and the interrelationships between consumption, mediation and production; all of which helps the design student embrace critical thought and reflection. History, along with other critical studies, are often considered extraneous to the student, often reviewed as "Why do I have to take this?".

Since the Industrial Revolution, where the intellectual conception of a design was no longer exclusively tied to the ability to produce it, schools have grappled with how to teach critical studies, which inform the intellectual "conception and planning" of professional design practice. These competencies included social, theoretical and historical understanding. Assessing relevant precedents in design education, as well as historical forces that have shaped curriculum and the content of design education, this research aims to address best practices in the teaching of design history to a design student. The first level of assessment is inside the classroom, analyzing content, pedagogy and assessment concerns through a series of interviews I conducted and educational theories in cognitive sciences of learning. The three interviewees come from distinctly different backgrounds, bring their own pedagogical techniques to the history classroom, and rationalize assessment and activity planning in different ways. The courses to be assessed are History of Modern Design (Drexel University), taught by the historian, David Raizman; Objects as History (Parsons, School of Design) taught by American studies scholar David Brody; and History of Industrial Design (Rhode island School of Design) taught by designer and historian Matthew Bird. The second level is at the curricular level, assessing twenty American universities curricula (10 public, 10 private) , examining the various approaches placing historical studies in design education, how it aligns with practical coursework and if there are instances when cross-curricular supports that are happening. When considering the broader goals of a product designer's education, how is the form through which history is introduced--as a seminar, a lecture, or a lecture with recitation sections, or hybrid courses--inform its content and the goals of the curriculum more broadly? How do these delivery mechanisms affect the design practitioner's ability to learn history and ultimately, become a critical practitioner? Furthermore, is the way we teach history enabling heuristic skills to be transferred to critical making? When conveying historical content to young design students, is the goal to make them better historians or better designers, and how should that affect the way that it is taught? Design pedagogues need to assess these pedagogical approaches and understand where the precedent for "good" education has come from, to meaningfully develop relevant and productive education for future generations of design students.

Temporal Environments: From Kites to Site

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Keywords Experience, Present, Adaptability

A B S T R A C T

Traditional site observation techniques confine the many layers and conditions of place to singular, static moments. Mapping, sketching and measurement deliberately and rightly constrain the range of possible subjects on which to focus, but can also restrict the overall engagement, and thus a full, complete and tactile comprehension of place and site. That same ability to scan a space to better comprehend its nature may also feed the false perception of site and place being static, simultaneously reducing the ability to understand one's synthetic place within it. The inherent nature of data collection isolated from experience is not a given, however. Immersive opportunities can reveal not only a more holistic conception of the environmental conditions of a site, but the inter-connectivity and relationships between fluid conditions; each changing and operating across their own boundaries of time.

The workshop that this paper reflects on was a introductory design studio held on Oahu, Hawaii, open to beginning and non-design students alike. Emphasizing fundamental beginning design lessons such as form, material and construction, it was dedicated to the investigation of flying machines as a means of both exploring site and designing to the manifold conditions of place. For two weeks, students were deeply immersed in the long legacy of the world's oldest form of air-craft. Kites have long standing parallels with and direct ties to architecture throughout their 5000 year history, having been used to measure (through shadow), survey, and communicate in various urban and rural settings.

Using unfamiliar methods of site observation to engage a wide range of interaction with complex site conditions supported a deeper and more pronounced connection to site, space and the evolving conditions of time - many of which are reciprocating and regular, but tied to their own periods and intervals. Students not only engaged with machinery and new modes of time- (the launch of the kite, for example) but the temporal nature of space and environment.

With a host of design typologies to explore, each unique design was tightly linked to site, environment, utility and convenience. Deployed to engage the conditions of each site, each original kite was designed and built for specific locations and conditions around Oahu. As Vitruvius famously noted, "There are three departments of architecture: the art of building, the making of timepieces, and the construction of machinery." (De Architectura. Chapter III Book I). This studio pulled heavily from all three "departments" with an emphasis on the less familiar aspects of each, while seeking to expose the linkages between them as well. From abstract sculptures to (analog) flying photographic devices, the design, construction and flying techniques of these machines were at the core of this workshop designed to provoke and challenge students assumptions about site analysis, prompting critical thinking and problematizing the boundaries of architecture.

Time, Travel and Documentation

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Keywords Experience , Media. Present

A B S T R A C T
While some travel immersive architecture programs focus on 'drawing from travel' as a primary component of the academic experience, an alternate approach is to promote independent methods of travel documentation. Encouraging the use of multiple mediums, including the mobile phone, reconciles the desire to see as much as possible with a productive engagement in the seeing and experiencing of architecture in context. The goal is to have students take ownership of the experience itself through their use of a variety of media.

Historically, the architectural Grand Tour was a self-directed study of monuments and master works undertaken as a capstone to a professional education. Since the late 1960's, elite universities have offered residency semesters abroad, in places like Rome, Florence and Paris, that emulated the American Academy in Rome with its focus on classical architecture as a foundation of western culture. More recently, travel has become a fluid and integral component of the academic experience. The length of travel and the focus ranges from brief site studies for a studio project or research seminar to history surveys and drawing courses. Yet, the travel recording methods retain much of the legacy of the Grand Tour.

Today's academic travel provides the opportunity to explore travel documentation as a subject of architectural study. The act of recording should be as Le Corbusier described "une chose active," an active thing, a way of developing one's own expertise. The published travel sketches of Le Corbusier, Louis Kahn, Alvar Aalto, Michael Graves, Alvaro Siza, and Charles Rennie Mackintosh are aspirational for the variety of subjects and the techniques of drawing and sketching which differ according to the context and the eye, hand and interests of the producer. Their authenticity recommends their study as valuable resources.

In contrast, the stylized version of the 'travel sketch,' popularized in the 1970's and 80's, using felt and fountain pens with marker and watercolor washes is the most commonly endorsed travel drawing technique of the architect/architecture student. This style of sketching, linked to post-modernism, prioritizes shared public pedestrian space and the architecture that supports it recalling ideas of human-scale, ornamentation, and context. One must question a stylized drawing techniques' ability to draw out an individual point of view or engagement. With current interests in architecture framed by fast urbanization and mega-cities, sustainability and energy, regionalism and materiality, models of emerging practices, local and global architecture, what is the technique for documenting the complexities of today's architectural environment?

What does it mean to travel, see, and record? How do we encourage students to develop une chose active. Le Corbusier in his journey to the East wrote letters and columns for his hometown newspaper, maintained sketchbooks, made paintings and documented sites through photography. Students should consider their methods of recording as a way of seeing and taking note of the things they encounter. Investing in both the observation and the method as a productive endeavor looks to find a balance between what is observed and what is retained.

Natural Time and Sustainable Design in the Second-Year Architecture Studio

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Keywords Sustainable Design, Natural Time, Sow, Circadian

A B S T R A C T
The methods, tools and approaches of sustainable architecture are shaped by a wide variety of competing social interests. Simon Guy has described the field in terms of "contradictory certainties" (Guy 2010). A similarly wide array of confidences and cultural backgrounds are brought to studio by beginning design students. Taking time to reflect on the studio teaching environment, identifying expectations, and yet being asked to develop critical perspective: these are difficult accomplishments for the beginning design student. They are equally difficult objectives for the studio instructor trying to foster the critical thinking so necessary for understanding sustainable design. Introducing the question of time in architecture, however, presents students with a temporal awareness – the past and the future of what it might be we want to sustain. Moreover, introducing the potential of the "slow movements" in sustainable design presents the possibility for resistance to the social norms of studio. "Slow" refuses the culture of late nights, the anxiety of an over-caffeinated body: slow resists. Like the sense of a faint breeze of a fresh air, a small chink of a liberating light, and the rhythm of a natural time, slow is needed in the architecture school. "Slowly" is how a critical awareness can develop about the nature of sustainable architecture and how it can be fostered in the architecture studio. In this paper, I thus build a philosophical argument for a slow studio and an educational program for the beginning design studio based upon temporal awareness in design. Reviewing experiments in alternative studio pedagogies, and with the addition of examination of radical pedagogies, I build a program for a design studio that allows students to commit (for a short period) to the slowing of time and, in so doing, to find their own natural time. I present a studio manifesto (and a contract for the willing students), a teaching philosophy, a syllabus and a class schedule. The studio is a fictional studio, but it is also a critical design in itself. While slow is the antithesis of architectural studio culture it is required as an alternative to allow students to connect with an experience of natural rhythm, and to sense the reality of the experience of architecture.

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Creative Thinking: First Attempt and Changes Ahead

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Keywords Beginning, Imagination, Individuality

A B S T R A C T
"Are there examples?" in teaching a course on creativity? The proposed paper outlines the course I taught for the first time, entitled DSGN 110: Creative Thinking.

This course is an introduction to problem-solving through creative cognition and imagination. Students in this course will study what it means and is to be an individual and "a creative."

The course works through 7 themes within creativity:

       1) Preparation and Concentrated Effort
       2) Observation and Curiosity (Exploitation and Exploration)
       3) Divergent Thinking and Fluency
       4) Right Brain vs. Left Brain and the Feminine/Masculine
       5) Openness/Flexibility and Confidence in Ambiguity
       6) Action/Persistence and Commitment
       7) Epiphany and Revelation

We address each of these themes for between one and three weeks, studying these ideas through a combination of readings, podcasts, and videos followed by lecture and content-based in-class quizzes. We also approach these ideas through student-driven discussion panels as well as through guest speakers from the community and the University.

Some of the things we read and listen to include podcasts from This American Life, Radio-Lab, and Studio 360, readings from psychologists J.P. Guilford and Karl Duncker, readings on 'Design Thinking,' and Ted Talks and other videos, on people like Ray and Charles Eames, Coco Chanel, Joseph Maurice Ravel, and David Byrne to name a few.

In class, we do RAT questions, draw in response to classical music in a collaborative fashion, write letters in picture form, make paper airplanes, write creative and imaginative stories based in National Geographic imagery, discuss empathy within many concerns and issues, write manifestos, and have conversations purely in question form… to name a few.

Out-of-class exercises range FROM:

Select 5 of the following words and make up your own dictionary entry for each of them. The definition you create must be substantively different from the actual definition of the word. We recommend that you don't even look the words up—if you don't, you'll allow your mind to be more open and flexible. In 250 words, explain the process you used to create these definitions.

Semifreddo	Apotheosis	Lugubrious	Turgid
Querulous	Hirsute	Ranarium	Zufolo
Esoteric	Glockenspiel	Scintillate	Xylivorous
Carapace	Onomatopoeia	Exenut	

TO:
In a group of four, create a new dessert recipe that highly features one of the following: fennel, dill, green peas, chili peppers, or garlic. Document your kitchen study in both your process and with pictures, this needs to include iteration and how you move past failure to the next step. The documentation should be typed and presented in manner that is clear both visually and in narrative form. For inspiration, watch The Iron Chef or Cupcake Wars. We also recommend you challenge yourself and work with students you do not know well. Each member of the group needs to submit a PDF document separately to D2L.

Qualities of Light
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Keywords   Focus, Precedent, Speed

A B S T R A C T
The paper focuses on helping students understand the experiential qualities of architecture. This focus aims to remove the notion many 1st year design students arrive with, that architecture is a formal object, and deliver them to the realization that architecture is inhabited, occupied, and experienced in reality. Students are engaged in a series of investigations that question the qualitative aspects of architecture, with a specific focus on the phenomenon of light and how it changes over time.

A crucial point of these investigations lies in the fact that they focus on how light interacts with an actual tangible object. While digital modeling allows for fast and accurate understanding of where direct light will and will not strike, it lacks the potential to communicate the qualitative aspects of light in architecture. Instead of fast and accurate, the studies embrace the idea of slowness as a working methodology.

In initial investigations, students construct large-scale physical models of architectural precedents emphasizing materiality, texture, thickness, color, and fenestration so that the artifacts re-create the conditions analogous to that of the actual building. The models are placed outdoors and oriented relative to the sun, allowing the students to record how the light qualities change throughout the course of the day, documenting the conditions inside the model with a series of photographs taken hourly. These photographs demonstrate the direction(s) from which light enters the building and how the changing position of the sun over time affects the quality of light within.

This sense of how light changes over time is especially important as it serves as a counterpoint to professional photographs of the spaces that are readily available. While those photographs present an ideal condition for a given space (shot when the natural light is ideal or augmenting a space with artificial light to provide an otherwise unobtainable ideal), the series of photographs that emerge from the physical models allow students to gain a realistic understanding of how the character of light changes within a space as time passes.

Upon collecting their observations from the precedent studies, students create surface models that modify the light that passes through. The students are asked to not consider the formal attributes of the artifacts they construct. Instead, they are asked to make decisions based on the affect created by their artifact, allowing the form/shape to become secondary to the artifact's potential to create an atmosphere.

These surface studies carry through into the design of a sacred space that emphasizes the presence (or absence) of light and how its qualities affect the experience of the space. As in the precedent models, students construct large-scale study models that communicate the quality of light within the space. Instead of making design decisions based on external form, students make choices based on how the light that enters affects the experiential qualities of the space within. The notion of architecture as a formal object becomes eroded as the students consider experience and inhabitation as critical elements in the evaluation of their designs.

Time and Narrative: Cultivating Public Space, History, Research and Design with Transmedia
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A B S T R A C T
On the morning of November 22, a journalist in Kitchener-Waterloo, Canada broke a story presenting new evidence in a cold case which had baffled police for nearly a century. Her report was based on an interview with a middle-aged local woman named Janneth C. Smith whom she tracked down through Facebook and contacted by email. Lisa Drew excited her audience with historical artifacts and old news-clippings from Smith's family that suggested a solution to the hundred-year-old mystery: the abrupt and total disappearance of Toronto theatre magnate Ambrose Small in 1919 after cashing a cheque for one million dollars, leaving his baffled wife, secretary, and empire of numerous theatres. Police investigations into the high-profile case, rewards offered, clairvoyants interviewed, came to nothing. Due to his role in Michael Ondaatje's novel In the Skin of a Lion, Small never left the public imagination. An intriguing character, wealthy and powerful, his theatres concealed secret apartments within their walls. As the sensational report ran on 570 News, Facebook searches for Janneth C. Smith surged into the hundreds of thousands.

There was just one problem with the viral news story. The anchor had unwittingly reported a transmedia fiction. She had inadvertently tumbled down a 'rabbit hole' intended for players of an Alternate Reality Game designed by my 2A architecture students as the collective term project in their Cultural History course. The students, of course, were elated, as they had just discovered at first-hand the role of the imagination in how history is made.

Millennials show different learning needs: more engagement, approaches that speak to their world. They raise issues concerning them: global warming, refugee crises, wars, ethics, the media circus. While teaching them, you're competing with Youtube, Google, Facebook, Wikipedia, Tumblr, Instagram, alerts, and text messaging.

To familiarize students with the value, complexity, and presence of history, I wanted to create an active learning environment, foster voluntary research initiatives, horizontal or peer learning, and community involvement. Frame a workflow that would reward the group's diversity through collaboration. Critically, to nurture architectural attunement, the project (though including digital media) should take place in the physical environment of public space. Considering these parameters, I dived into researching a fascinating art-form I knew little about, because it is so new on the world stage: transmedia storytelling.

Transmedia communicates one story via multiple platforms or channels of information, as in writing history one consults photos, letters, buildings, plans, websites, books. Although social media, discussion groups, and forums facilitate connections, our designers' goal remained to propel the story into the 'real world' and 'hack' public space to amplify pockets of 'resistance.' The Alternate Reality Game animates the spectrum between digital and physical worlds.

My students had an advantage: as "digital natives," they kept in their pockets a device constantly used to research, communicate, design, navigate, document, schedule, edit, and play: a smartphone. In assembling information, and naturally thinking as collaborative problem-solvers, Web 2.0's hive-mind forms part of their identity. #transmedia #history #narrative

Integrating Conflict Into Early Design Education

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A B S T R A C T

The day-to-day practice of architecture must navigate within a system of contexts often replete with competing values. Dictated through external forces by clients and patrons to effectively execute the work. This requires the process of design and construction to rely on constant tactile adjustment made by the demands of clients, codes, budgets, etc. to address the landscape of contingency. Every project, decisions are made about quality of materials versus reality of budget and time constraints or owner-prescribed values and requirements versus site and building code constraints. Engaging these conflicts defines the profession of architecture.

How can architectural students confront these conflicts within their own education?

Professional Practice and Community Design curriculum plays an essential role in addressing this question. Traditionally these courses introduce students to the comprehensive field of practice, existing within a broad range of social, organizational, economic and professional contexts. The Community Design academic experience has become an especially valued pedagogy within architectural curriculum because it provides students irreplaceable life lessons: real world decisions have consequences. Immersing students in an environment of conflict and speculation, which requires tactile improvisation. Effectively integrating these types of real-world projects into a professional practice course can better position the curriculum as a crossroads between architectural practice and academy. The significance of these experiences lies in confronting real-world constraints. They provide valuable learning opportunities for design students, however, seldom until late in a students' design education.

How can you embed real-time information and context feedback into core learning objectives in for the beginning design student?

In the book Integrated Buildings, Leonard Bachman argues: "Integration is about bringing all the building components together in a sympathetic way… where components "share space, are aesthetically resolved, and at some level…have to work together or at least not defeat each other." Bachman's argument requires a broader system thinking approach. When individuals have a better understanding the interdependency of dynamic systems, they are better able to identify the leverage points that lead to desired outcomes.

This paper will assess a unique pedagogical approach at Kansas State University, that introduced beginning 3rd year design students to an architectural praxis: integrating building systems and their function into the design process rather than ignoring systems until the very end. To that end, an integrated design project was developed. Deliberately outside the design studio the project bridged two required technical courses: Architectural Structures and Environmental Systems in Architecture. The two classes shared one Integrated Digital Model using Rhino modeling software. These models were intended to evolve and change from assignment to assignment, and from class to class.

The design process was not prescriptive, it's intent was to expose students to a process of designing, where structural and environmental systems are truthfully integrated. The teaching model built a feedback-loop into the design process. It required students to identify design conflicts, bringing knowledge gleaned in one class to address issues in the other. Engaging these conflicts promoted tactile improvisation allowing students to exercise creativity and imagination to generate unique responses to their project.

Discovering Experiential Knowledge: A Public Interest Design (PID) Research Studio in Yankton, SD

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A B S T R A C T

In the age of experience economy, the prevailing market forces continually adopt cultural values that promote flexibility, personalization, and user participation in design. Given this changing climate, Public Interest Design (PID) is ascending as a new method of the production of the built environment in America. PID, or "outcome-based design" contrasts conventional mode of production as it hybridizes formal and experiential knowledge to attain more predictable and life-enhancing outcomes. In practice, PID engages people in communities and extracts community-based experiential knowledge to define and solve place-specific problems. In architecture schools, nationwide educators establish Community Design Centers (CDC) or launch design studios of public works to prepare students for the challenges PID would pose now and in the future.

This paper presents a pedagogical method that introduces a real-world PID process in an undergraduate architectural studio. Deployed to support an ongoing community participatory design initiative in Yankton, SD, the method prompts students to engage Yankton people and study their first-person street-walking experiences in search of potential architectural interventions to downtown Yankton. At the beginning of the studio course, students collected video footage data from head-mounted video cameras that record research participants' first-person street-walking experience. The data analysis took two stages. First, the students performed a cinematographic analysis inspired by Gordon Cullen's study on townscape, extracting "key views" (reflecting motions and positions of body/head in space) and "visual foci" (reflecting eye movements in response to specific environmental contents) from the video footage. The students then built 8'x4' interactive collages composed of detachable and replaceable graphic elements to represent findings. Second, the students returned to Yankton and had research participants to check the data and interpretation by manipulating these collages. The students then analyzed modified visual materials, produced reports, and explored design intervention strategies the could improve the "serial vision" of a walking person in downtown Yankton. Final findings disclose the mutuality of the environment and the perceiving agent bounded in one and the same ecological system, demonstrating the relevance of James Gibson's ecological approach for understanding complex person-environment transactions in urban settings.

This studio teaching method exposes students to serval real-world challenges of PID, especially the communication gap between design professionals and non-professional community members. Visualization means employed in the course effectively helped faculty and students to extract, articulate, communicate and verify subjective experiential knowledge together with the participating Yankton people.

The paper is concluded by a discussion of the method's theoretical and practical implications for incorporating PID projects in architectural education, assessing the potential academic gains for beginning architecture students on aspects of design research, design thinking, and design communication. The author argued that introducing the PID method can develop these universal design capabilities in conjunction with a sensitivity toward public opinions and perception, preparing students for their future involvement in publicly funded projects or public-private partnership (PPP) projects. The author also gave a critical evaluation of this street-walking research method regarding qualitative research qualities, operability, and field research logistics.

Flipping Time and Space: Three Methods of Contextualizing Architecture History in the Classroom

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A B S T R A C T

The history of architecture, like all of history, is complex. For the beginner, it is easy become lost in the plethora of dates and images to memorize and miss important connections between individual architects, buildings, movements, technological advances, and changes in the social, cultural, and political context in which they existed. The paper intends to explore three methods for helping students to contextualize modern architecture history, to see the big picture as well as the details.

The first method is the utilization of a flipped classroom model. With the ubiquity of online learning resources (documentaries, YouTube videos, texts, articles, etc.) the burden on the lecturer as the sole purveyor of knowledge is alleviated. The availability of these resources creates the opportunity for class-time and homework-time to be flipped. Rather than passively hearing a lecture during class, students can engage with online course content individually, at their own pace, and on their own time. Class time can then be spent on discussions and other activities, which maximize face-to-face feedback and promote higher-order thinking skills. The teacher's role shifts from lecturer to guide, helping students to synthesize rather than memorize information.

While resources for learning about architecture history online are ubiquitous, learning through a series of browser windows is not conducive to developing a panoramic view of history. For this reason, the second method for contextualizing architectural history in the classroom is a large, wall-mounted, historical timeline. At the close of each class meeting, students identify key information from the online lectures, videos and readings, and write it

on the timeline, giving facts the space to breathe and commingle. The timeline is embedded into the space of the classroom as a living document of the collective knowledge of the class, a point of reference for in-class discussions, and a gathering place for informal talk about architecture and history. Furthermore, by permanently displaying the timeline in a classroom used by all year levels, we are embedding the timeline into the consciousness of our younger students.

The third method is a multi-phase, semester-long project in which each student examines the course content from a different angle. Each student picks a theme (i.e. Architecture and Technology, Architecture and Ethics, Architecture and Truth, The Role of the Architect, Architecture as Language, Architecture and the Public, etc.) and keeps track of how the relationships within this theme in architectural history have shifted over time up to current day. Students extend their research to include sources and examples from beyond delivered course content. They regularly present these varied perspectives to each other through their own prepared discussion questions, peer-review workshops, and presentations. Each student's research will ultimately be submitted in the form of a literature review and published in a collection for reference in future studios and research classes.

Through these learning experiences, students can learn the who, what, and when, but more importantly, the contextual how and why of architecture. Collectively, these methods contribute to a deeper understanding of the multifarious nature of architecture.