DISRUPTERS ON THE EDGE

ANNUAL MEETING

ACSA 112

ABSTRACT BOOK

DISRUPTERS ON THE EDGE
2024 ACSA 112TH ANNUAL MEETING

ABSTRACT BOOK

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CONTENT

PEDAGOGY: PEDAGOGICAL DIMENSIONS

Thursday, March 14, 2024, 2:00pm-3:30pm

Unorthodox Pedagogy: The American School Approach

Stephanie Pilat, University of Oklahoma

At the University of Oklahoma (OU) under the leadership of Bruce Goff, a new approach to teaching and practicing architecture, known as the American School[1], developed in the mid-twentieth century. While other schools followed curricula inspired by European modernism, the American School taught students to imagine novel, experimental, and organic forms. Students were challenged to use ordinary and found materials from wood shingles and feathers to ashtrays and sewer pipes. They were taught to respond to the characteristics of a site, climate, program, and client. Most importantly, the American School approach sought to produce the architectural equivalent of chefs: students known for combining ingredients and forms in inventive ways, rather than line cooks who dutifully followed the recipes of their instructors. This approach stood in contrast to the predominant approach of the day as international modernism evolved into an orthodox dogma in schools across the U.S. At a moment when student work in architecture schools increasingly looked the same—marked by flat roofs, ribbon windows, glass, steel and concrete—the American School work was alarmingly different. While students elsewhere learned to imitate the styles promoted by their professors, the American School taught students to develop their own identity as designers. Today, as the idea of a school producing disciples is becoming retrograde, reconsidering the American School approach is long overdue. An examination of this unorthodox pedagogical approach helps us understand how educators can coach students to cultivate creativity. This paper asks what we can learn from outliers of the American School, the so-called renegades? An examination of assignments and student work reveals how innovation was, and still can be, taught.   [1] Donald MacDonald, "Preface: American School of Architecture.," Architecture and Urbanism, 1981, 17–18.

From Home Front to Architectural Frontier: How the Cambridge School Redefined Architectural Pedagogy

Sonya Falkovskaia, Harvard University

The Cambridge School of Architecture and Landscape Architecture, active from 1915 to 1942, was a groundbreaking institution in architectural education. It was the first U.S. school to grant master's degrees to women and integrated the teaching of architecture and landscape architecture. Beginning and ending at the height of two world wars, the Cambridge School challenged prevailing academic and professional norms, offering a disruptive, barrier-free space that redefined architectural pedagogy and influenced the field. Largely forgotten to history, this paper uses the conceptual framework of the home front to reframe the school's legacy as one of defiance to a system that tried to silence it, particularly its influence on Harvard's Graduate School of Design (GSD). By collecting and uncovering previously disparate source materials from several archives, this paper connects the physical manifestations of the school to its pedagogical frameworks to elucidate the school's complex and far-reaching influence during its active years and beyond. Recognizing the Cambridge School's contributions provides a deeper understanding of women's role in architectural education and challenges historical dismissals of their contributions. This pioneering institution reshaped architectural pedagogy, promoted women's agency, and continues to offer valuable lessons for a more inclusive and equitable architectural profession.

Pedagogical Reverberations: A Taxonomy of Design Studio Responses

Claudia Hernandez-Feiks, New York City College of Technology
Ting Chin, New York City College of Technology

"As Architecture has evolved, so too has the way architecture is taught." 1   Robert Stern and Jimmy Stamp   In architectural pedagogical discourse, an important vein of discussion pertains to the methodologies and frameworks established by educators to facilitate the structuring of threads between concept development and the physical articulation of architecture. The prompts we select are intended to foster and provoke students to innovate, reverberate with the current dialog, and develop relevant and meaningful responses to architectural problem-solving. In many instances, the incorporation of prescriptive methodologies has emerged as a strategy to assist students in translating ideas into architectural solutions. As Joan Ockman writes: "Geared to producing skilled practitioners and founded on concepts of discursive formations that have evolved since the time of Vitruvius, it combines technics and aesthetics, sciences and humanities. Schools are called on highly disparate types of knowledge, negotiating the architect's multiple identities as craftman, technician, and creative artist; public servant and businessman."2   To gain a deeper understanding of the broader context in which we teach students to navigate the design process, we collected and analyzed project briefs from over fifty design studios in established architectural institutions in the United States. Each project brief was studied to determine the approach and methodology employed. Based on recurring themes that emerged, we categorized the briefs into six distinct approaches and created a taxonomy matrix (Fig. 1).   The catalog serves two primary functions. Firstly, it aims to establish the context of design studio pedagogy by documenting the various approaches employed in architectural institutions across the United States over the past eight years. Secondly, it categorizes different tactics to examine how these methodologies prepare students to reach the higher tiers of Bloom's taxonomy, particularly in terms of analyzing and evaluating complex design problem-solving. It is important to note that our research does not advocate for any specific design approach. Instead, it serves as a reference and resource for educators and students, providing insights into current pedagogical approaches while also encouraging critical reflection on our own ideologies.   The objective of this paper is to refine and contextualize the catalog within the thematic lexicon and historical forces that influence architectural education. We use the book Architecture School: Three Centuries of Educating Architects in North America as the initial framework for our work but recognize that, as Joan Ockman states in the introduction, it reflects the time when it was written3. Therefore, we also reference more contemporary approaches in architectural studios that are constantly redefined and influenced by current global discourse. As evidenced in the book Radical Pedagogies, particularly during times of urgency, teaching practices are called on to revisit their approaches, experiment and consider their future evolution.4

Nontraditional Grading for Equitable Learning: Alternative Assessment in Architecture

Kristin Barry, Ball State University

Students come to an architecture curriculum from a number of backgrounds and perspectives. Many of these students are high-achieving in their secondary education and well-versed in historical contexts, beginning design practices, and/or advanced mathematics. Other students may be artistically inclined and/or hard-working, with acceptance into an architectural education as the penultimate alley by which they will become a professional. Students may be first- or fourth-generation college attendants, or traveling to the United States for the first time. These spectrums of preparedness, natural talent, and learning styles illustrate the infinite ways in which design students engage with new information. Traditional point- or percentage-based grading may be motivating to a specific subset of these students, but can actively work against certain students. This paper demonstrates the benefits of disrupting traditional grading in early architectural education and refocusing on equitable, nontraditional practices. Where the pedagogical objective is advancing student learning, how to assess this learning with consistent, measurable artifacts becomes the challenge, particularly with regard to lecture or seminar-based support courses. Architectural History/Theory, in particular, presents the architectural past from a variety of lenses, requiring students to critically assess sources, images, and rhetoric to come to a full contextual understanding of the built environment. Traditional grading methods for architectural history courses included quizzes and exams, slide identification, and research papers or essays, that ask students to regurgitate information given in lectures and/or textbooks. These strategies have proven to be unsustainable for long term memory of fact, and instead measure how much a student can repeat in the moment. More contemporary practices of reflective essays or other assessments of content have proved to help students remember information in the longer term, when introduced to controversial or charged content, students may feel graded for their opinions, rather than their comprehensive understanding. Furthermore, both of these practices have proven to be inequitable to students who begin the course with little to know historical context or those who learn is ways that are not being assessed. With these challenges inherent in architectural history of theory courses, alternative grading methods present a way to analytically engage students in course content, allowing them to honestly reflect and explore, while still challenging them with coursework. Contract or Specification grading, Summative Evaluation, and Ungrading, which have been used in primary and secondary education, as well as graduate education, allow students a deeper connection with learning beyond a point/percentage-based system. These practices are rarely applied in undergraduate education, however, as the four-point grade point average and "A" through "F" grading scale employed by most universities discourages alternative grading methods. This paper explores the benefits and constraints of using non-traditional grading practices, detailed rubrics, and integrated design projects in two architectural history/theory courses, focusing on student learning objectives and summative understanding of course material. Disrupting the stereotype of the "sage-on-the-stage" history/theory course, alternative teaching and grading that requires self-reflection and discourages adversarial discussion may help students better understand not only the content of history by its application as critical in the design process.

BUILDING SCIENCE AND TECHNOLOGY: BUILDING SCIENCE & SUSTAINABILITY

Thursday, March 14, 2024, 2:00pm-3:30pm

Future Use Architecture: Connecting housing policy, housing typology, and resource use for housing in Canada

Daniel Rondinel-Oviedo, McGill University
Naomi Keena, McGill University
Martha Pomasonco-Alvis, Think-tank and Research in Architecture and Circular Economy (TRACE) lab, McGill University, Montréal, QC, Canada

This study investigates the potential of residential building material stock in Canadian cities to address Canada's housing and retrofitting needs. We introduce the concept of Future-Use Architecture (FUA) within a Circular Economy (CE) design approach. Cities are significant contributors to a nation's material resource use, but they are also banks of materials. In alignment with Canadian government policies and projections, the study addresses the imperative of retrofitting 600,000 homes annually until 2040 and meeting the demand for 2.3 million new homes between 2021 and 2030. FUA involves incorporating recovered materials into new building designs and the early integration of end-of-life building strategies, such as design for disassembly. This approach encompasses a comprehensive evaluation of urban building material stocks and the development of reuse and recycling strategies.   This paper builds on prior work by the authors that investigated the potential carbon emission reductions through material recovery in Canadian housing stocks. Taking this as a starting point, it links this knowledge to current government policies for renovating and building new housing in Canada by 2040. The findings highlight the substantial quantities of building materials embedded in our structures and the considerable potential for reducing environmental impacts, such as carbon emissions, through adopting the Future-Use Architecture (FUA) approach. However, it becomes apparent that substantial shifts in both material supply and construction practices within Canada are imperative to fully unlock the potential of FUA and efficiently utilize the materials stored in our buildings.

Pervious Concrete Grotto: A Modular Evaporative Micro Climate
Alex Timmer, University of Wisconsin-Milwaukee

Deploying research on the role of evaporative cooling utilizing pervious concrete, this project attempts to formalize the relationship between module form, aggregate form, and evaporative capacity through a physical installation. Utilizing passive environmental principles, in which the performance of the wall is dictated by its environment, in this case the access to rainwater and wind, the installation is always "on." Intended as a system which could extend in all directions infinitely, utilizing Stan Allen's concept of the field condition, the physical installation is understood to be a smaller chunk of a larger possibility. Less of an enclosure and more of a generator of microclimate, this project attempts to connect issues of modularity constructability and microclimate. This relationship between form and performance is a dialectic expression of systems thinking writ large in its design. The rules which dictate aggregation also impact the evaporative performance of the elements. The wall consists of previous concrete precast elements which are tapered in plan and angled in section to produce variation through their aggregation. Their shape allows for the wall to turn depending on how it is stacked. Mirroring elements will produce a straight wall while repeating elements turn the wall, creating small spaces. These smaller spaces will necessarily experience greater cooling effects. The wall is doused in rainwater which infiltrates deep into the wall through the pervious concrete. As wind and other natural ventilation processes push through the previous medium, evaporation is encouraged, cooling the concrete mass. The cooling of the wall produces a microclimate that is a byproduct of the ambient air temperature and humidity. The evaporative capacity of the wall is limited by that same air temperature and relative humidity. Thermal cameras and temperature sensors are used to document the heating and cooling of the wall throughout the year as it experiences different levels of precipitation and ambient environmental conditions. Testing of the wall is also completed with hand applied water. With interest in passive environmental strategies, the pervious concrete grotto used modular concrete elements to produce a microclimate through water evaporation. It seeks to produce the cooling experience of a grotto, which acts as a datum to the ambient air temperature and relative humidity. It makes legible one possible expression of the relationship between passive material performance and the form of architecture.

Seven Generations for Wood Waste

Kaia Nielsen-Roine, University of British Columbia
AnnaLisa Meyboom, University of British Columbia

Vancouver has a construction and demolition (C&D) waste problem. We produce about 1.7 million tons of C&D waste every year and of that, 31% is wood waste.[1][2] Given that about 57% of new buildings in Vancouver are light-wood type buildings, the city needs a strategy to reduce the demands for new wood in new constructions.[3] This project presents a method to recycle salvaged wood from deconstructed light-wood buildings and use those materials in new deconstructable assemblies. Common wood waste such as dimensional lumber, plywood, oriented strand board (OSB), laminated strand lumber (LSL), and laminated veneer lumber(LVL) can be recycled into new wood products including finger-jointed lumber, recycled content OSB, OSB/LSL or Plywood/LVL crosslam tiles, and wood fibre insulation. To demonstrate the viability of these materials, I constructed a full-scale mock-up of a wall section that can, in turn, be fully deconstructed and reused or recycled using the proposed recycling technology. This research creates a framework that would help reduce the construction industry's reliance on new wood material and promote circular reuse and recycling of wood products rather than wasting or downcycling wood to biomass or waste-to-energy fuel.
[1] Metro Vancouver, comp., 2021 Biennial Report Integrated Solid Waste and Resource Management Plan, 10-11, January 11, 2022, accessed September 19, 2022, http://www.metrovan-couver.org/services/solid-waste/SolidWastePublications/2021ISWRMPBiennialProgressReport.pdf.   [2] BC Housing, Residential Construction Waste Analysis, by Light House, 5, accessed October 1, 2022, https://www.light-house.org/wp-content/uploads/2021/05/Residential-Construc-tion-Waste-Analysis-May-27-2021.pdf.   [3] City of Vancouver, comp., Issued Building Permits (Vancouver: City of Vancouver, 2023), https://opendata.vancouver.ca/explore/dataset/issued-building-permits/information/

Engineered Living Materials (ELMs) for the Built Environment
Gundula Proksch, University of Washington

Over the past decade, the field of Engineered Living Materials (ELMs) has emerged, combining synthetic biology and material science to mimic the properties of natural living materials. ELM research aims to produce novel materials with tailored functions using genetically engineered organisms coupled with synthetic or biological polymers to create desirable features like self-repair and enhanced mechanical properties. ELMs have been applied in regenerative medicine, therapeutics, electronics, device engineering, computing, and construction in the built environment. ELMs are a rapidly growing field that is based on the convergence of synthetic biology with polymer science. The authors of this study are part of a National Science Foundation (NSF)-funded project, in which we define ELMs as composite materials of engineered living cells encapsulated within a polymeric matrix. Our interdisciplinary research team comprises chemists, biochemists, bioengineers, mechanical engineers, and architects who develop ELMs for the built environment, which includes 3D-printable resins with engineered living cells that exhibit different functionalities. The focus of our lab-based research focuses on three main issues around innovative ELMs: (1) the ability to thrive in changing hydration levels (outdoor environment) and survive periods of low hydration levels, (2) the integration of photosynthetic active, productive cells in high-tech building membranes, and (3) the creation of ELMs clusters as resilient bioreactors for bioproduction. This study reports on the structure of this research project and the state of the science of ELMs research in general. It highlights the need for disciplinary collaboration on ELM research between chemistry, molecular biology, bioengineering, material science, architectural design, and beyond. The multidisciplinary discussion offered by this paper juxtaposes the science, built environment, and design

DESIGN: NEW HOUSING PARADIGMS

Thursday, March 14, 2024, 2:00pm-3:30pm

Contested Circumpolar: Domestic Territories

Mason White, University of Toronto
Kearon Roy Taylor, University of Toronto
Matthew Jull, University of Virginia
Leena Cho, University of Virginia
Lola Sheppard, University of Waterloo

Claimed by the eight Arctic nations—Canada, Finland, Greenland, Iceland, Norway, Russia, Sweden, United States—while also being the native territory to numerous Indigenous peoples, the Arctic embodies a complex, contested space in the 21st century. Territorial claims, resource extraction, climate change, and ongoing colonialism reflect the range of ways in which inhabitation has been imposed and negotiated in the last 100 years. Simultaneously, stories of daily life of inhabitants who call the Arctic home further reflect a richly heterogeneous cultural landscape at the forefront of accelerated transformations. "Contested Circumpolar: Domestic Territories" presents eight narratives of inhabitation from each Arctic nation that reveals deep and complex connections between domestic space and the larger territory. The installation situates domestic life entangled with broader sociocultural, economic and geopolitical forces. It is presented as "core samples" capturing place-specific domestic-territorial linkages that are also emblematic of collective matters of concern in the Arctic. A series of rooms within each house juxtaposes the distinct artifacts and architectures of domestic life, while the territorial narratives on the underlying cores expose the interlinked far-flung contexts that give shape to these domestic scenes. From mold to mines, from rooms to regions, circumpolar domestic space represents the frontline of transnational politics,

Not for Sale! - Housing Education at the Intersection of Activism, Architecture, and Advocacy

Matthew Soules, University of British Columbia
Adrian Adrian, University of Waterloo

Not for Sale! is an innovative studies abroad course on contemporary housing that takes place at the 2023 Venice Biennale of Architecture. The course teaches students about the complex interrelationships between design, public policy, finance, and political action while allowing them to directly participate in an activist campaign against commodified housing. The course invites students to collaborate with participants in this ongoing housing campaign. Altogether, students work with ten activist organizations, ten architecture practices, and ten advocates. This diverse group includes experts on housing commodification's disproportionate impact on the working class, women, and racialized people. Almost one-third of campaign participants are Indigenous activists, architects, and advocates who are at the forefront of examining the relationship between colonization and housing. Thirty students are subdivided into teams who collaborate with a subset of activists, architects, and advocates to determine campaign tasks in a bottom-up fashion. Student work has included such things as researching new collective ownership models, designing a prototype for off-grid housing for Indigenous women and girls, developing a social media campaign around a gentrification tax, and case studies of intentional communities for unhoused people. Two separate universities jointly offered this for-credit course to both undergraduate and graduate students. Both universities have provided generous financial support to ensure equitable access. The course, which runs for five months, takes place inside an open-to-the-public pavilion on the grounds of the Venice Biennale in Venice, Italy – an historic first. This setting affords students the opportunity to make connections with the larger body of work at the Biennale while engaging visitors as an immediate experience in architectural activism. Architectural activism is a vital frontier in architectural 'practice.' Through collaboration, discussion, research, drawing, modelling, and action, this course equips students with the means to create housing that is socially, ecologically, and

Denver Low-Rise: New Domestic Forms of Collective Living

José Ibarra, University of Colorado Denver
Leyuan Li, University of Colorado Denver

Denver Low-Rise: New Domestic Forms of Collective Living is the second foundational design studio in the 3-Year M.Arch program at the University of Colorado Denver College of Architecture and Planning. The course focuses on a spatial investigation of shared domestic spaces, speculating on a new paradigm of collective housing driven by the studio's collective research on "Missing Middle" housing typologies.

Today, mid-sized and large American cities, such as Denver, Seattle, Albuquerque, Minneapolis, and Richmond, all have in common problems with housing affordability, gentrification, and homelessness. Denver, for instance, has one of the nation's worst housing shortages, with the city having a deficit of approximately 70,000 units. This housing problem is even exacerbated by the predominant single-family housing model. With less land for building houses and with soaring prices for rent and mortgages, low- and moderate-income households have been displaced, which has diminished housing equity by intensifying the existing social and racial segregation. Moreover, the insistence on the idealized single-family housing has championed the privatization of public spaces, such as swimming pools and gardens, attenuating the advantage of sharing spaces and resources among a more diverse constituency. With less flexible arrangements, the current housing model fails to engage a wider variety of living demands, creating more barriers to expand the measures of affordability and collectivity celebrated by the real dwellers of contemporary cities.

Responding to these conditions, this studio asks: how could we update the existing framework of "Missing Middle" housing and create new typologies that engage the diverse constituents of growing American cities? Thinking through new technologies and cultural shifts that inspire contemporary dwelling changes, what domestic forms— such as shared living rooms, collective kitchens, and communal laundry facilities—could be updated, reinvented, and collectivized to enable a common ground?

A Home For Alice

John Folan, University of Arkansas
Candice Adams, University of Arkansas
Urban Design Build Studio (UDBS) , University of Arkansas

In the Timberlands Region of Arkansas, nearly a quarter of the full-time essential workforce earns minimum wage, placing members of that population below the federal poverty threshold. Many more exist just above the poverty threshold. Over 40% of households are unable to afford basics, forcing impossible choices and risky trade-offs. Asset Limited, Income Constrained, and Employed – ALICE might be a cashier, waiter, childcare provider, or any productive contributor to the community. Where does ALICE live? Who is ALICE? What can be done to break the cycle limiting ALICE's prosperity? How can ALICE be empowered? These foundational considerations informed the development of a three-credit unit (3CU) undergraduate seminar at the Fay Jones School of Architecture + Design, A Just Home for The Arkansas Timberlands, that focused on the role designers can play in restoring dignity and justice through housing for rural communities in that region. A two-part pedagogical framework employed by the UDBS AR HOME LAB leveraged extensive data collection with the aspiration of reshaping dialogue related to financial hardship. The first component of work focused on 'who' and 'where', requiring students to explore human condition, asset mapping, collaboration opportunities, and context. A subsequent and complementary component of work focused on 'what' and 'how', requiring analysis of extant housing typologies, labor force dynamics, logistics of regional residential construction, and culture. Sponsored by a grant from industry partner, Weyerhaeuser, research developed in the course supported grass-roots application findings through design. Students in the course were familiarized with local culture, community members, and vital stakeholders providing a platform for the development and construction of a regionally specific, replicable housing prototype in the Arkansas Timberlands Region - Home for ALICE.

This presentation was moved to Saturday, March 16, 2024 in the Design: Building Equity Though Design session.

Building Tomorrow: A Comprehensive Guide to Flood-Resilient Housing in Malaysia

Sharika Tasnim, International Islamic University Malaysia (IIUM)

Malaysia, a nation grappling with the recurring threat of floods, necessitates a comprehensive understanding of the current scenario regarding flood resilience. The repercussions of the floods in December 2022 have been severe, with 62 villagers resorting to boiling floodwater for daily consumption, highlighting the immediate threat to public health. Tragically, the floods claimed lives, including a man electrocuted on December 19, 2021, and three Malaysian sisters meeting a similar fate on December 19, 2022. These unfortunate incidents underscore the critical importance of reevaluating the approach to housing and urban development to ensure the safety and well-being of Malaysian communities. It is evident that existing housing structures in Malaysia are vulnerable to the increasing frequency and intensity of floods. The paper presents a thorough investigation of the challenges and opportunities inherent in the quest for sustainable and resilient housing due to the increasing flooding risks in Malaysia. A qualitative research methodology is adopted for this research by analyzing perspectives through the semi-structured interview of 50 diverse respondents, including key stakeholders, homeowners, architects, urban planners, engineers, landscape architects, policymakers, and community leaders. A noteworthy finding from the interviews with 50 respondents reveals the inadequate guidelines for flood-resilient housing design in Malaysia. The lack of comprehensive and effective guidelines poses a significant risk to the safety and well-being of Malaysian citizens and the country's infrastructure. As Malaysia faces the reality of climate change, it is imperative to adopt innovative strategies for constructing flood-resilient housing. The objective of the research is to provide a comprehensive guideline for building housing in Malaysia that is resilient to floods. The guide provides a wide-ranging overview of the resilient electrical, plumbing, levels, and materials that can be incorporated to build flood-resilient housing. Hence, this research focuses on bridging the void, catalyzing a transformative shift towards a more resilient, sustainable, and well-guided approach to housing in the face of Malaysia's perennial flooding challenges. To further this research, it is recommended to identify the factors affecting the implementation of flood-resilient and sustainable housing in Malaysia.

SOCIETY + COMMUNITY: COMMUNITY INFRASTRUCTURES

Thursday, March 14, 2024, 2:00pm-3:30pm

Terms Of Transition In The Ohio River Valley

Jeffrey Kruth, Miami University

As an existing condition, many of the landscapes of the Ohio River Valley and Appalachian region have been abandoned by both a market-driven economy and meaningful state intervention. Under-resourced, these communities now face another generation of disinvestment, leaving communities to face what Patricia Williams describes as an "inheritance of a disinheritance."1 Recently, local politicians and leaders within the Ohio River Valley from Youngstown, Dayton, Cincinnati, Pittsburgh, and elsewhere have called for a Marshall Plan for Middle America to reinvest in these deteriorated communities. The encouraging side of these plans largely call for an investment into sustainable businesses, however without a clear design framework for projects. Even with admirable calls for investment, there is the danger of repeating problematic top-down planning agendas, or promoting what theorist Lauren Berlant refers to as a "cruel optimism" where community desires in relation to state and market forces are discovered either to be impossible, sheer fantasy, or too possible, and toxic.2 In this context, investment by state or private sources is neither guaranteed, or, if it does occur, it tends to reinforce existing privatized institutional frameworks, often benefiting private actors more so than any broader public. This is especially problematic as much of the recent investment in the Ohio River Valley is focused on extraction economies, and transitioning the region into the next "petrochemical corridor," similar to Louisiana's infamous petrochemical "cancer alley," located between Baton Rouge and New Orleans.   Given this framework, my paper discusses the work of a recent upper level undergraduate studio. Pedagogically central to our investigation is the design of institutions and infrastructures. While many architecture studios begin with the assumption that adequate funding will support a student's hypothetical design, we began our work researching the limitations of existing institutions, their funding streams, and their spatial extents. Working alongside community partners ReImagine Appalachia, we questioned the existing functions of institutions including local governments, industries receiving public dollars as part of harmful extraction economies, and the infrastructures that support these activities that are seen as normative. As a case in point, the recent catastrophic derailment of the Norfolk Southern train in East Palestine, Ohio occurred early in our studio, prompting questions of how the train and its contents are part of a larger system of infrastructures, business practices, and government policies that shape daily life and culture. Student responses included re-imginaging the mobile home industry as part of a government program for social housing; the creation of a feminist inspired Civilian Conservation Corps; and the repurposing of toxic fly ash from industries to be used in new forms of sustainable infrastructure throughout the region. Our work in the studio is aligned with the conference theme of "disrupters at the edge" through our geographic focus in the Appalachian region of the Ohio River Valley, which is peripheral to many conversations in architecture. Our work with collaborators ReImagine Appalachia, can also be seen as disruptive, as they seek to redefine institutional capacities and practices to better serve residents in the region.,

Relocalize Our Food
Courtney Crosson, University of Arizona

Archaeologists distinguish Tucson, Arizona as the oldest continuously-farmed landscape in North America. Currently, 18% of Tucson residents live in food deserts, communities in which low-income residents have restricted access to healthy and affordable foods. Despite its agricultural history, recent efforts to relocalize urban food production to meet these nutritional needs have raised concerns that the city is already water-stressed and cannot afford additional irrigation demands.

Relocalize Our Food is a public-private-academic partnership formed by multi-disciplinary researchers, local government agencies, four community food-cultivation organizations, and ten fifth-year B.Arch students and professor. Relocalize investigated the feasibility of expanding the urban food systems of Tucson across available municipal land using only locally sustainable water supplies: passive rainwater harvesting, active rainwater harvesting, and reclaimed water. This investigation resulted in four urban food system typologies: river adjacent, urban alley, community garden, and indoor controlled agriculture. The capacity to grow food across each of these typologies with locally sustainable water supplies was tested through geo-spatial analysis and hydrological modeling. Community assets and needs for multi-benefit solutions were identified through engagement activities with food cultivators, distributors, and neighborhoods. Ultimately, the research-design work discovered that over 100% of nutritional needs can be met with locally sustainable water sources if these typologies were implemented across the 711 acres of available municipal land in current food desert areas.

The work culminated in a public outdoor exhibition at a large historic garden in Tucson; this event served to disseminate the research-design, stimulate conversation, and offer a platform to gather feedback on the relocalization of urban food systems. Project impact has been significant; Relocalize's community garden design is currently primed for by the county and community food bank, the city and county have dedicated portions of their comprehensive plans to sustainable relocalized food production, and news outlets have publicized Relocalize's work.

Hard Labor, Soft Space: An Atlas of Radical Ruralism
Stephanie Lee, Bard College

Following the global food crisis of 2007-2008, international "land grabs" are redrawing the global map of farmland ownership as foreign direct investments continue the legacy of colonization. While global famine becomes a major concern, Western, Chinese, and Middle Eastern companies are leading a 21st-century land rush in African farmland where more than a hundred million acres are under a 99-year lease. Colonizing forces, now guised as foreign corporations, aggressively depletes rural corners of the global south. Local smallholder farmers are dispossessed from their land to secure stable supplies for the rest of the Western Hemisphere. In the plantationocene1, modern industrial agriculture violently irrigates farmland into plots of controlled "colonies" underneath high tunnel structures. This research highlights current alternatives to these closed systems of industrial and capitalist exploitation. "Hard Labor, Soft Space" is a research-based design investigation on the current surge of collective farms and radical food systems in and around the Hudson Valley. While land distribution laws such as the Homestead Act (1862) and Alien Land Laws (1913 to present) have predictively driven the current racial disparity in agricultural land ownership, this project reframes rurality as a site of radical reclamation. This project first examines the role of race, labor and land in agriculture-based collectives, particularly in the Northeast region of the United States. The state of New York is site to some of the earliest form of settler colonialism dating back to 1545 when Giovanni Verrazano, an Italian explorer, lands in New York Bay and encounters the Lenape tribe. Hudson Valley's colonial history is foundational to the agricultural extraction of Indigenous tribes as well as the subsequent human trafficking during the Atlantic slave trade for forced agricultural labor. As the post-pandemic world romanticizes countryside living and gentrifies local townships, it is imperative to construct an counter-history of agricultural settlements in the Northeast region. This research forms a comparative genealogy of utopian agrarian projects in the U.S., starting with early settler colonialists such as Pietists to 19th/20th Century Abolitionist movements in the United States which inspire the current wave of BIPOC-led radical farms. The project links together more than fifty agrarian based communities such as Nashoba Community (1825-1828), Timbuctoo (1848–1855), Freedom Farm Cooperative (1969-1976)2, New Communities Inc. (1969-1985) to more recent land justice projects such as Sweet Freedom Farm, Soul Fire Farm, Choy Division and Star Route Farm, all located within the state of New York. Critical of the limitations of Liselotte and Oswald Mathias Ungers' "Communes in the New World: 1740–1972", this project addresses the racialized history of rural construction and proposes future living strategies based on racial, social and economic justice.3 It is part of an ongoing, speculative investigation on rural spaces as modern utopian testbeds that yearn for an alternative collective future. Through archival footage, interviews and counter-mapping, this project highlights alternative agrarian settlements and renounces models of industrial farming that thrive on the extraction of labor, capital, and lands of others.

The Enduring Commons in the Evanescent Age: The impact of E-commerce on the rural commons in Zhejiang, China

Sufeng Xiao, Harvard University

This project examines the relationship between collective land management by villagers, the construction and improvement of logistics and internet infrastructure, and the establishment and operation of e-commerce businesses in rural villages in Zhejiang, China. Zhejiang is the home province of Alibaba, China's largest e-commerce and technology company. The research aims to investigate how the development of e-commerce influences rural life, and vice versa. The study focuses on villages that have undergone significant transformations due to their active engagement with e-commerce industries. These transformations have been facilitated by the support or negotiations with mega e-commerce platform companies and various government agencies. As a result, these villages have experienced noticeable increases in exposure, production efficiency, and overall land development. The research documents change in the rural landscape at regional, local, and human scales. It also explores the social dynamics among villagers, including mutual learning, imitation, cooperation, and competition. The project aims to gain a deeper and more nuanced understanding of how these dynamics impact the decision-making of villagers and local village leaders. This is achieved through on-site fieldwork, GIS analysis, literature review, and comparative case studies. The specific aspects of decision-making that are explored include the establishment of new industries, land use transformation, and the construction of infrastructure and communal service facilities. Additionally, the project investigates the current state and future impact of these new development projects. The goal is to promote equitable and sustainable development of urban-rural commons for the villagers who are experiencing these changes.

ECOLOGY: ECOLOGY OF DESIGN

Thursday, March 14, 2024, 2:00pm-3:30pm

Earthen Ecologies: Creating Micro-Habitats for a Local Elementary School's Learning Environment

Peter Raab, Texas Tech University
Erin Hunt, Texas Tech University
Terah Maher, Texas Tech University

As climate change increases global temperatures, the cooling demand in the world is anticipated to triple by 2050. New systems using minimal energy could create affordable ways to reduce the grid strain of air conditioning in some of the hottest climates (Walecki, 2022). Anthropogenic impacts including intensive agricultural and forestry practices, pesticides, urban sprawl, and ballooning population are causing habitat loss, and dwindling biodiversity (Cardoso et al., 2020). Ecologists and biologists have documented a 75% reduction in the biomass of flying insects over last 30 years (Hallmann, 2017). This research project combines bio-climatic design with 3D-printed clay technologies to construct micro-habitats for smaller, vital ecosystem members that also provide passive evaporative cooling to adjacent spaces. Our interdisciplinary team is collaborating with a local elementary school to develop an interactive living wall that will demonstrate the positive impacts that bio-climatic material assemblies can have upon occupiable spaces. Clay has been considered for evaporative cooling due to its porous properties dating back to Ancient Egypt, 2500BC, in Muscatese evaporative systems. This system combines a wooden screen, "mashrabiya", and a water-filled ceramic vessel to passively cool interior spaces. This system has been replicated more recently using irrigated 3D-printed ceramics with variable porosities (Gan et al., 2022; Rael et al., 2015). Past projects have integrated 3D-printed planter blocks to augment traditional bricks in new construction or replace existing blocks within walls (Rael et al., 2009). Since these blocks utilize additive manufacturing (AM), they can be fabricated in infinite designs and sizes. These blocks used selective laser sintering (SLS) AM of clay to create highly detailed designs. This AM method can be cost-prohibitive due to both machine and material costs. Therefore, fused deposition modeling (FDM) AM of clay paste has become a promising and affordable alternative. While experimenting with design iterations not all the printed material is fired (turning raw clay into ceramics), which allows the remaining material to be rehydrated and reused. Its recyclability makes it an excellent material for an iterative design process. Op.Architecture + Landscape PLLC (Scelsa, 2021) and Co-mida (Farinea, 2022) have investigated a series of clay 3D-printed blocks that house various flora and fauna, but this project is the first to combine evaporative cooling and the creation of an ecosystem. This paper presents an ongoing research project that explores the potential of a 3D-printed ceramic block system for creating a vegetated microclimate within a semi-arid environment. The study focuses on two types of blocks: evaporative cooling blocks and blocks designed to sustain plants and animals. The current research stage involves testing the system's viability by constructing a 2-square-foot vertical pollinator's garden that utilizes irrigation. The paper will discuss the design process, the current state of the system plans for future iterations, as well as the challenges faced, and the results obtained. The findings of this project suggest that further research in this area could contribute to preserving semi-arid ecosystems while providing cooling effects with minimal carbon emissions.

Drawdown Architecture: Decarbonization and New Architectural Ecologies in Para-Climate Change Iceland

Debbie Chen, Rhode Island School of Design

The road to decarbonization is a web of woven pathways – while the building sector works hard to reduce embodied and operational carbon, governments and utilities should pivot cities away from fossil fuels and incentivize renewable energy infrastructure. On this latter point, architectural design could play an important role on how renewable energy is adopted into the everyday life of its users. Beyond energy models and smart envelopes, design has an under-appreciated influence on how cultural value is perceived or produced through any given built infrastructure or utility. Furthermore, constructing a larger cultural framework around renewable energy systems helps to accelerate and substantiate the green transition. In questioning how architecture participates in this cultural rethinking, this paper focuses on Iceland integration of geothermal energy into everyday cultural practices and how architectural effects work in tandem to produce this cultural-infrastructural bind. Iceland's survival through anthropogenic change is both age-old and ever-present. Volcanic eruptions and high rates of soil erosion provide scarce arable land, yet geothermal and hydroelectric power sustain the country with 85% renewable energy. Simultaneously bountiful and limited in resources, Iceland's integration of geothermal energy into multiple cultural spheres is a harbinger for a built environment practicing climate adaptation and survival. The research, conducted in Summer 2023, involves the documentation of geothermal sites (active geothermal fields, energy generation facilities, greenhouses, heritage sites, food vendors, etc.) and the analysis of material, formal, haptic, and tectonic qualities attached to these systems. As an ongoing project, Geothermal Cultures will continue to focus on how renewable energy systems, cultural practices, and architectural form work together to encourage public support towards renewable infrastructure.

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Sage Hill : A Post-Natural Geoform for Multi-Species Reestoration
Jonathan Scelsa, Pratt Institute
Jennifer Birkeland, Cornell University

As humans continue to develop, build, and rebuild on areas around the globe, the integrity of the soils that are built on continue to be compromised through this distribution and environmental conditions. With the accelerating damage and effects of climate change, the technologies employed in environment engineering are expected to provide protection, as well as an ecologically sensitive application. The clearing and replacement of existing landscape inherently human centric, as it disregards the other cyclical relationship at play between the vertical elements of a root stabilizing tree stands and their surrounding biodiversity. Joyce Hwang in her essay Living Among Pests, has suggested that the needed reconnection of biodiversity with our urban buildings will force a re-examination of "articulation [of our built surfaces] to take on more responsibilities. Ornament will become performative ." The project, Sage Hill re-imagined the practice of soil-stabilized geotextiles, through new material and technical investigations towards a post-natural condition. A small hill was designed as composed of a series of 3d printed earthenware geo-textiles that wove together informing a topographic chain, providing both soil stabilization, as well as habitat establishment for both flora and fauna., -

MESO-COSM

Brittany Utting, Rice University
Daniel Jacobs, University of Houston

A mesocosm, or "medium world," is an infrastructure for long-term outdoor ecological experimentation. According to the systems ecologist Eugene P. Odum, mesocosms are situated between the microcosm of the laboratory and the macrocosm of the planet, enabling observations of real-world conditions. Filling the gap between these scalar extremes, mesocosms are critical research infrastructures for studying the effects of anthropogenic climate change. They are typically organized into arrays of self-similar environmental "patches" in which variables such as temperature or atmospheric composition are adjusted to simulate changes in an ecosystem. Alongside the technical labor of scientific research, they accommodate the intimate labor of tending and nurturing their interior worlds. This tending extends to the architecture itself as their envelopes are breathable, operable, and adjustable, suggesting new ways to reimagine architecture's relationship to the land and its cycles. The open-endedness of the mesocosm offers a way to reorient environmental thinking toward a less controlled and increasingly entangled spatial practice.

MESO-COSM proposes four architectural prototypes that test this open-ended tectonic through calibrated enclosures and environmental systems. Typical architectural assemblies reject the exterior, hermetically enclosing the interior to remove any possibility of climatic mixing. Instead, is there an alternative way to design the envelope, to reclaim architecture as a planetary assemblage? Like mesocosms, we imagine that these prototypes are both lively machines and living experiments: full of inclement weathers, pollinated winds, and creaturely communities. Multi-layered roof filters, facade shading enclosures, as well as water and energy capture infrastructures encourage environmental adjustments at the scale of the building. These systems create thermal gradients and ventilation currents, enabling a more sensuous open-air interior. Situated in the uneasy space between technical mediation and environmental encounter, these "meso-types" suggest architectures that participate in the frictions and mediums of our changing climates.

Instruments of Invention and Intent: Evolving Pedagogy for Early Architectural Drawing
Adam Dayem, Rensselaer Polytechnic Institute

A major component of early architectural education is teaching students to draw architecturally. This involves teaching students how to use drawing as an instrument of invention, and as a demonstration of that invention. This dual function of drawing has typically been introduced to beginning architecture students in exercises based on primitive, abstract geometries. These exercises are typically set up to produce and document proto-architectural conditions including relationships between interior and exterior, relationships between figure and ground, sequences of spaces, and material thicknesses. My own work as a visual studies instructor is an example of this type of drawing exercise. For a number of years, I have taught a visual studies course in which students draw a set of five partially open nested boxes, two of which incorporate an oblique cut. Students are taught to accurately describe the geometry of an assembly of these boxes in multi-view orthographic drawings and axonometric projections (Fig. 1). Then using descriptive skills acquired in these exercises, they are asked to transform the boxes through a series of two and three-dimensional drawing operations. Drawings resulting from these transformations are inventions of form, color, and texture (Fig. 2). They contain proto-architectural conditions such as those listed above. The project presented here is a proposal to evolve this visual studies course to include an exploration of how notations of material and energy can be added to more conventional representational techniques dealing with describing and manipulating abstract geometry. Rather than a set of abstract boxes, the source drawing object for this new version of the course will be a household coffee maker, because at a small scale it can be treated as an analogue for how materials and energy are consumed by and flow through a building. First, as an exercise in accurately describing geometry, students will draw the coffee pot in a multi-view orthographic drawing (Fig. 3). Then students will photographically document the coffee maker as an assembly of parts and make an approximate calculation of the embodied energy and carbon in manufacturing its major component materials, and in operating the appliance over the course of a day, month, and year. Inputs for operating the coffee maker will be visualized as volumes and flows, and then incorporated with descriptive geometry and energy research in a composite drawing (Fig. 4). This drawing will be built up as a series of weekly exercises and will serve as the final deliverable for the course. The final stage of the course will explore the speculative potential of a representational system that incorporates consumption and flows of materials and energy (Fig. 5). Views of a three-dimensional model will be used to invent and visualize new configurations of materials and energy along with new configurations of abstract geometry. Contemporary architecture ought to be inventive in how it responds to consumption and flows of materials and energy, so incorporating materials and energy into representational systems ought to be a part of early architectural drawing education.

Decelerated Traces: Crafting a Drawing Practice for an Early Design Curriculum
Pari Riahi, University of Massachusetts Amherst

Robin Evans, once noted that drawing's "generative power has mainly been unacknowledged in principles and theory."[i] Over the past few decades, the development of digital tools has led to the evolution of architectural drawings into new platforms, concerning the validity of the tools, the unfolding of the techniques, and the legitimacy of the end results.[ii] The abundance of seemingly complete and multi-faceted digital drawings which appear to be too over-determined, too finished, and too realistic renditions of ideas, calls for reflection on what should constitute drawing methods and practices for a beginning design studio, to allow ideas to mature and evolve at a different pace. Often, in architectural practice, use of digital technologies is synonymous for speed, efficiency, and an ease of participation and access for more than one author. Logically the widespread use of these platforms has grown in that direction and fortified a linear augmentation towards fast produced, multi-sourced drawings. The present work takes issue with this notion of productivity in a pedagogical context and reflects on the avenues and methods that can slow down, complexify, and tamper with such premises.[iii] It presents a selection of work by students who start the first semester of a three year graduate program in architecture at the University of X. By resisting the immediacy, which is implicit with most of these platforms, the work presented here expands on a different drawing agenda, one that can in turn enable more meaningful spatial, formal, and programmatic discoveries for students who start their education in architecture. Developing links between evidence and imagination is key in the structure of the studio which proposes a fully engaged practice of drawing, keeping in mind Paul Emmons's suggestion that in order to activate the "constructive and inhabitative imagination" which are critical for architecture, developing embodied drawing practices are vital. [iv] The following questions have been foundational in crafting the premises of the studio: Can we maintain digital drawings as a vehicle for experimentation and discovery, without being consumed with technological procedures? How should we teach, and what would we teach in lieu of traditional drawing methods? What are the contemporary paradigms that allow us to make and judge the process of conception and realization of an architectural project? Ultimately, what do we foresee as the future of the drawing practices of today? In line with Mark Wigley's suggestion that the role of the architect is to " provide some kind of coherent thinking out about heterogeneous forces," the curriculum brings together studying evidence and understanding it by drawing, constantly " reassessing, reimagining and reconsidering" it.[v] Cohering these questions and concerns has given shape to the development of a curriculum titled: XX, where most students who enter the program have limited architectural background and come from fields as varied as engineering, geology, classics, journalism.

Design in Dialogue: Precedent in the Introductory Design Studio
Aaron White, Mississippi State University

This paper examines the use of precedents in the introductory design studio through an examination of courses offered between 2018 and 2022 at two accredited schools of architecture. The use, or conversely the rejection, of precedents in architectural education has played no small role in defining our discipline's most influential pedagogies. While the École des Beaux-Arts, for instance, required students to not only examine precedents but adopt their formal language, the Bauhaus treated precedents as mere impediments to the kind of technical competency required of the artist-as-artisan. Today, schools of architecture have largely done away with any but the most cursory use of precedent. If this has tempered the worst abuses of École academicism, it has also tended to alienate students from a perhaps myopic, but nevertheless constitutive, form of disciplinary knowledge and its attendant capacity for analysis and close observation. Conversely, if the Bauhaus (and thus our continuing) return to "fundamental" principles left little room for the study of at least architectural precedents (although other fields were often referred to), the freedoms thereby won came at the expense of the very context against which the proliferating novelties might have been measured. As a result, even when the Bauhaus's laudable aims have been achieved, students have often been deprived of (and are themselves often unable to assess) any deeper understanding of their work's significance within the field. The sequence of studios discussed here sought not only to place these two pedagogies (Beaux-Arts and Bauhaus) in dialogue, but to construe the design process itself as a dialogue between student and precedent. Beginning with works of architecture ranging from Eero Saarinen's MIT Chapel, to Qingyun Ma's Father's House, to Robert Morris's Select Architecture, students were tasked with the design of an addition-to or renovation-of their precedent. The need to produce a design intervention on the precedent itself required students to move fluidly between design and analysis—new forms of organization requiring deeper analysis of existing forms and vice-versa. The addition and alteration of extant works presents architecture's history as a series of incomplete acts requiring the student's interpretative reassessment. Students are encouraged to view their work as both dependent-upon and contributing-to an interpretative context provided by (yet always exceeding) the precedent. Thus, the studios present a model of design agency based neither on the expertise of the connoisseur and the inimitable "perfection" of supposed exemplars, nor on the "self-"expression of the supposedly autonomous maker inventing the discipline anew from first principles. Architecture's history becomes a crucial, yet insufficient, context against which design decisions become articulable and assessable in terms not only of their novelty, but their significance.

Exercising the Everyday: A Pedagogical Approach

Alyssa Kuhns, University of Arkansas

Early architectural education is often introduced through concepts couched in abstract, formal strategies. This approach requires a large conceptual leap for beginning design students, causing difficulty in grasping concepts and transitioning into design education. As an alternative pedagogical approach, this paper considers the everyday as a basis for conceptual development and skill building in beginning design. It argues that pedagogy based on a familiarity with the everyday human experience in the built environment leverages intrinsic knowledge and makes design a more accessible practice. This paper outlines the application of the everyday as a pedagogical approach in first-year undergraduate seminar courses. In these courses, students develop both an understanding of design concepts and digital workflows through representational exercises. Exercises are framed around concepts and workflows of architects and artists concerned with the everyday. Work like that of Allan Wexler or Rachel Whiteread outlines a methodology for students to use observation or transformation to find new readings of everyday forms and spaces. In addition to design processes and workflows defined by the everyday, exercises use objects and spaces familiar to students as inputs to explore abstract design concepts such as composition, scale, and positive/negative relationships. Using the everyday as a constant, students learn new variables such as representational strategies, digital tools, and design concepts through these exercises.   In today's educational context of increasingly virtual or hybrid modalities, students are removed from physical settings that facilitate creative acts and spend more time at home, facing the dominant presence of the everyday. This paper discusses how pedagogy focused on the everyday can serve as an equalizer, allowing students to incorporate personal experiences into their beginning design education and find comfort with the familiar at a time when everything is new.

BUILDING SCIENCE AND TECHNOLOGY: BUILDING SCIENCE & DESIGN
Thursday, March 14, 2024, 4:00pm-5:30pm

Embodied and Operational Carbon Analysis: A Grasshopper-Based Method for Visually Comparing Impacts of Material Choices

Mike Christenson, University of Minnesota
Malini Srivastava, University of Minnesota
Robert Gay, University of Minnesota

This paper aims to describe and evaluate a parametric method for enabling embodied carbon analysis early in architectural design. The method utilizes Grasshopper, within Rhino, to convert volumes of modeled materials into equivalent volumes of carbon dioxide, providing a means to visualize and compare embodied carbon impacts. As described here, the parametric method is an extension of an earlier method developed within a graduate-level architecture design studio focused on renovating an existing building. The studio aimed to influence students' awareness and consideration of embodied carbon impacts in their design processes. The extended method described here is aimed at improving its relevance to early design decisions informed by awareness of embodied carbon impacts. The paper provides details on the extended method and its implementation, identifies limitations, and proposes specific enhancements.

Action Plan: A Survey of Patenting and Commercializing Building Science Research within Design Programs

Liane Hancock, University of Louisiana - Lafayette

A recent article in The Atlantic by Robinson Meyer entitled "The Climate Economy is About to Explode," forecasts clean energy as the leading driver to fuel future US economic growth, aided by the Biden Administration's Inflation Reduction Act. "The opportunity will be too large, the money too persuasive, the problems too intriguing… The fight against climate change is going to change more in the next four years than it has in the past 40." (Meyer, 2022)   As we look toward the 22nd century, government agencies are investing research dollars into the green economy and infrastructure at a rate previously unseen. Development of new building materials, assemblies, and systems are not far behind. While innovative technologies and assemblies are ripe for development, governmental agencies are also providing funding to retrofit buildings, conceiving of new ways to employ existing materials to decarbonize and to provide resiliency as we adapt to the realities of climate change. How can architecture faculty be essential to this important moment in history?   This paper identifies successes and challenges of bringing patentable research to market by faculty within architectural programs. Interviews with faculty members discuss assumptions, expectations, and the functionality of university support. The paper also introduces how required technology coursework can provide opportunities to engage in pure research, whether that is in the form of material-based investigation, or performance-based analysis.   The paper then discusses existing Federal Agency programs that encourage undergraduate and graduate student research within curricula, and funding for workforce development within architecture programs – teaching faculty how to bring technology to market. These federal workforce development programs provide grants for customer research, ideation, prototyping, patenting, and commercializing technology.   Recently, many design programs adopted the Department of Homeland Security CIP CODE 04.0902 (Architectural and Building Sciences/Technology), allowing for international students to participate in a 24-month STEM Optional Training Program. This paper concludes with an investigation into how this designation has provided both pure and applied research opportunities within design programs in relation to Optional Training Programs offered outside of academia.   Over 350 billion dollars have been dedicated to mitigating climate change to alter our infrastructure and built environment. Significant funding has already commenced, and it will complete within less than a decade. As design faculty, it is important to understand where we stand currently, and what obstacles need to be overcome in order to efficiently organize our efforts as a discipline to be leaders in applied research at this important moment in history for building science. This research will provide a survey of where we stand at this moment through interviews with stakeholders across our disciplines.

A Material Dilemma: To Breathe or Not to Breathe
Mary Hardin, University of Arizona

A university design-build studio designed and constructed a residence with bearing walls made of scoria (pumice stone fines mixed with water and cement) to test its efficacy in resisting heat transfer in climates with a wide diurnal temperature swing. Because it is a locally sourced and low-cost material, it has potential for use in the provision of affordable housing; more so if it contributes to lower utility costs. Challenges during the design and construction processes for this alternative building material brought unexpected results that created a path for future innovation.   The energy design hypothesis was that thick mass walls made of scoria would be effective in retarding thermal transfer to interior spaces, adequately maintaining temperatures within the comfort zone with minimal HVAC intervention. Thermal sensors were placed throughout the wall assemblies in order to record thermal transfer from the exterior to interior wall surfaces; temperature data from each sensor was logged every 15 minutes for one year.   Challenges that arose before construction commenced involved the categorization of the scoria with regard to the building codes (earthen versus lightweight concrete construction and their concomitant performance criteria). No building permits for scoria structures had been previously issued by the municipality, so the avenues for permit review were untested and required much documentation. The design-build studio worked to determine scoria mixtures which met the code requirements, as well as to build full-scale mockups of wall segments with integrated concrete bond beams. With both materials methods mostly defined, construction progressed with some expected attention to development of details. An unexpected post-construction dilemma was that the wall system, while highly effective at mitigation of thermal transfer, was porous enough that the assembly could not pass the code-required blower door test. Because of the air pockets occurring in pumice, the walls could breathe slightly. All other locations for air infiltration were sealed with caulk and foam after each failed blower door test. The air exchange rate decreased but surpassed the required threshold.   The head building official for the city agreed to examine actual measured data as evidence of performance according to the code requirements, and the project team negotiated a waiver of the blower door test by providing a month of daily data on thermal transfer to demonstrate effective environmental control. The thermal data and the waiver were entered into the public record, serving to inform future designs and code reviews for thermal mass assemblies. These public records serve as precedent for data provision about thermal mass designs as an alternative to air tightness testing.

Housing Affordability Under the Microscope: Measuring Heat Transfer to Quantify Cost Versus Performance

David Hinson, Auburn University
Mackenzie Stagg, Auburn University
Elizabeth Garcia, Auburn University

Residential energy consumption comprises the largest market sector in the US, totaling almost 40% of US energy sales[1]. Increasingly-advanced design tools for modeling assemblies, energy consumption, and embodied carbon have vastly changed the design and construction of high-performance housing and present a rich opportunity to reduce energy consumption through incorporation of energy efficiency measures in residential buildings. However, in the market sector of affordable, single-family housing, the value of implementing high-performance measures can be more difficult to assess. Frequently, housing "affordability" is addressed by simply reducing up-front construction costs. Consequently, one of the primary barriers to delivering high-performance homes in the affordable market is the additional up-front cost that these performance "upgrades" necessitate. This research theorizes that targeted increases in construction costs can enhance affordability when they are considered as a variable in the total cost of homeownership.   As part of an in-depth study and cost-benefit analysis of constructing homes to multiple beyond-code standards, this line of research studies heat transfer across assemblies in a pair of houses built to two different beyond-code energy standards. The research team evaluated the cost to construct key envelope elements directly related to beyond-code performance improvements and considered the correlation between the construction cost of key details and impact on energy consumption. The team identified areas where significant heat loss could occur within the building envelope and selected locations where investments in beyond-code performance was greatest. Using remote sensors to monitor wall and floor surface temperatures and ambient interior and exterior temperatures, the team measured heat transfer through the assemblies relative to the energy required to condition the space. Implementation of energy efficiency measures in affordable housing requires consideration of multiple factors beyond initial construction cost. This study analyzes key details and assemblies to gain a clearer understanding of thermal transfer through these assemblies to determine if reductions in construction cost and simplifying constructibility can yield similar performance results.

SOCIETY + COMMUNITY: CO-CREATION AND MUTUALITY

Thursday, March 14, 2024, 4:00pm-5:30pm

Planting Imagination: Community Co-Design for Toronto's Chinatown West

Linda Zhang, University of Waterloo
Josephine Pui-Hing Wong, Toronto Metropolitan University
Kenneth Fung, University of Toronto
Alan Li, Regent Park Community Health Centre
Mandana Vahabi, Toronto Metropolitan University
Tyler Fox, Springboard Youth Academy

Planting Imagination ran from 2021 to 2023 (during a pandemic recovery period) in Toronto's Chinatown West neighbourhood. It brought together a group of local Chinatown community organizations and [Name redacted] University researchers to recruit 60 diverse 'Chinatown Activators' (CAs) and six Community Facilitators (CFs) from across the community. CFs and CAs used virtual reality (VR) technology to co-design a local community garden and develop new visions for the future of Chinatown. Using cutting-edge VR visioning and the principles of the Collaborative Community Engagement Model (CCEM) co-design, the Chinatown community was provided with a platform to virtually envision the future of their own community and neighbourhood as a collaborative process. In doing so, they explored how we might transform the way we build and mobilize communities, (re)construct community identities, and strengthen the community's resilience to promote social justice and equity. This process strengthened community solidarity to enable local residents to more readily steward the future of the built environment and respond collectively to challenging events like the pandemic. Bringing together diverse disciplines and practices (including architecture, cultural psychiatry, interior design, immersive technology, computer science and public health), Planting Imagination developed models of therapeutic VR co-creation delivered through a series of online and in-person multi-lingual community co-design and co-fabrication sessions that prioritized the communities and neighbourhoods disproportionately impacted by COVID-19.

Spatializing Reparations: Mapping Reparative Futures
Danika Cooper, University of California, Berkeley

On July 29, 2022, the United States Supreme Court ruled on the Oklahoma v. Castro-Huerta case in favor of the state of Oklahoma. In doing so, the Court formally limited criminal jurisdiction on Indigenous lands and thus further eroded Indigenous sovereignty and autonomy. The Court concluded that Indigenous courts do not have the authority to criminally charge non-Indigenous people, even if that person has committed a crime against an Indigenous person, on Indigenous lands. Instead, states possess concurrent jurisdiction with the federal government over crimes committed by all non-Indigenous people.[1] This decision comes just shy of the two-year anniversary of the ruling in McGirt v. Oklahoma (2020) in which the Supreme Court concluded that nearly 43 percent of what is commonly known as the state of Oklahoma is in fact still Indigenous territory, and thus affirmed tribal jurisdiction over the eastern part of the state.[2] In the McGirt case, mapping boundaries of Cherokee, Muscogee, Choctaw, Chickasaw, and Seminole territories over time proved essential in the Supreme Court's decision to uphold Indigenous sovereignty (Figure 1). The McGirt decision represented a landmark victory for Indigenous struggles for sovereignty over their lands as it is one of the few moments in United States history where the US had been held legally responsible for adhering to and fulfilling its treaty obligations.[3] The case of Oklahoma v. Castro-Huerta directly challenged McGirt, with the state of Oklahoma arguing that Indigenous tribal courts should not have authority over non-Indigenous people, even if those people are occupying Indigenous lands.

Micro-Intervention and Co-Creation at a Family Shelter

Sameena Sitabkhan, Academy of Art University
Karen YunJin Seong, Academy of Art University
Lowai Ghaly, Academy of Art University
Mazen Ghaly, Academy of Art University
Mohamed Meawad, Academy of Art University
Andrew Hart, Academy of Art University
Kim Ebueng Estacio, Academy of Art University
Kendryx Soriano, Academy of Art University
Edgar Castillo, Academy of Art University
Peter Peritos, Academy of Art University
Shadi Vakilian, Academy of Art University

Micro-interventions can powerfully disrupt the systems that preclude an empowering experience in family shelters. Through co-creation, families can actively participate in the design research process. Valuing lived experiences of unhoused families removes the power imbalance between those with and without design training. Co-creation at the micro-scale prepares architecture students with skills to usher in change in the design practice. Undergraduate students in a collaborative studio fabricated 66 folding beds on wheels with storage compartments incorporating the suggestions of the families at an emergency shelter. Extensive prototyping was the primary method of co-creation. Students held themselves accountable to the families and developed a shared purpose to guide the process. Unhoused families at the Buena Vista Horace Mann K-8 Community School in San Francisco led to the creation of the Stay Over Program. It is a first-of-its kind emergency family shelter that uses the school gym to house 69 beds which comprises 79% of all available congregate family shelter beds in the city. The program required a complex partnership between the school, a non-profit shelter operator, SFUSD, and San Francisco Department of Homelessness and Supportive Housing. The non-profit supports the families transition to stable housing. Operationally, the dual use of the school gym is difficult - during the day the gym is used for PE classes and at night it is used as a shelter. The daily set up and break-down of beds is labor intensive. Additionally, the Stay Over Program, the most innovative component of this Community School, stays hidden from the day users of the space. The lack of visibility isn't representative of the deep sense of community among the families. Recognizing that levels of design literacy can create a power imbalance, full-scale prototypes were used to remove barriers to co-creation. Most of the families at the shelter were not English speakers which made the prototypes the most effective means for communication providing direct hands-on experience. To build trust with the families, and with the non-profit shelter operator, we documented our observations and presented design proposals as direct responses. Documentation of previous workshop sessions provided continuity when there were no returning participants. Co-creation is not new, but it should be more widely embraced as one approach to tackle systemic problems. Paired with micro-interventions, it can reach those who are furthest away from the design process. Humility is needed to develop a co-creation method that fully benefits from widely different lived experiences. Architecture students who develop co-creation skills can lead the change to include more people we advocate for in design processes. When the distance between the students and the families, the end users, is removed, design clarity is sharpened. The schedule and budget helped the team reach consensus efficiently. With such a small team, each student needed to identify their strengths to contribute which in turn allowed a variety of soft skills to be valued in addition to design and technical skills.

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Mutual Knowledge in Comparative Case Study of Indigenous Craft Practices in Las Loceras de Pilén, and Bát Tràng

Hojung Kim, University of Tennessee-Knoxville
German Valenzuela, University of Tennessee-Knoxville

This comparative case study examined indigenous knowledge, traditional building materials, and craft practices in two distinct locations: Las Loceras de Pilén in Chile and the pottery village in Bát Tràng, Vietnam. The study, conducted through a bi-national collaboration between universities in the USA and Chile, aimed to identify similarities and differences in traditional pottery work approaches and their impact on marginalized communities. Additionally, the research sought to preserve traditional craft techniques and integrate them into contemporary design practices. Field research, including observations, interviews, and workshops with local artisans, was employed to collect data and explore hybrid methods of designing and fabricating using analog and digital prototypes. Las Loceras de Pilén, recognized as a Living Human Treasure by UNESCO, represents a marginalized community grappling with inadequate pottery workspaces. This case study examined the proposal to design and construct a shelter to promote economic development and preserve the traditional pottery practices at risk of disappearance. The shelter aimed to provide a safer working environment and impart new construction skills to the community. As part of the research, a shelter was proposed and constructed in Las Loceras de Pilén, Chile, to support the endangered traditional pottery practices and safeguard Chile's intangible cultural heritage. Southeast Asian craft villages, including Bát Tràng, are confronted with the risk of disappearance due to the predominance of mass production and the global preference for cost-effective alternatives. This case study delved into the region's traditional pottery making techniques, investigating regional raw materials, practices, and the integration of traditional methods into digital design. The objective was to enhance the visibility and recognition of Southeast Asian crafts globally, while also exploring the socioeconomic contributions of traditional craft villages and the impact of economic reforms on these communities in Vietnam. Extensive fieldwork was conducted in Bát Tràng, Vietnam, and Las Loceras de Pilén, Chile. The research involved observing, interviewing, and collaborating with local artisans. The primary focus was on investigating the diverse clay types, minerals, and organic materials utilized in pottery making. The collection, purification, and preparation processes were thoroughly examined, alongside an exploration of various pottery techniques, such as hand-building, wheel-throwing, and mold casting. The study sought to comprehend the intricate movements, gestures, and tools employed by skilled potters. The study emphasized the significance of empowering local artisans and communities through community engagement and expanding the reach of pottery beyond its existing boundaries. It shed light on the value of local resources, cultural heritage, and sustainable systems. The success of the project was evaluated based on the participatory process, collaborative fabrication, and the tangible outcome of the shelter. The project served as a platform to demonstrate the utilization of new biomaterials and hybrid methods, amalgamating traditional craftsmanship with contemporary design expertise. The collaborative efforts between students and artisans in constructing the workshop contributed to the evolving methodology of design practices. This study is anticipated to inspire further research on participatory design-build approaches for constructing shelters and infrastructure in marginalized communities, thereby harnessing the potential of local materials.

ECOLOGY: ENVIRONMENTAL ECOLOGY

Thursday, March 14, 2024, 4:00pm-5:30pm

Trans-scalar Architectures for Earth: Rain Check
José Ibarra, University of Colorado Denver

What would it take to design a garden responsibly in the desert? How can we engage in reciprocal relationships with Living and Non-living things? What new forms of authorship and empathy might architecture wield to respond to environments as places full of cohabitants? These were some of the questions lingering in the undergraduate design studio, Rain Check. Using the Colorado and South Platte rivers as primary sources of knowledge, students measured, imaged, and simulated features of the landscape. This included creating narratives revealing geologic, biologic, and other features of the rivers while studying (in)visible forces of climate, culture, history, and human intervention. Seeking entanglement, collaboration, and scalar and temporal shifts, the studio engaged in strategies for survival that demanded cross-species coordinations. This practice of becoming with[1] the rocks, waterways, plants, and animals surrounding our site (and campus) was instrumental in unveiling the history and revealing the future of [City Redacted for Blind Peer Review] landscapes. The studio decentered the human in favor of the dynamic and fluctuating forces of nature. By using surrealist art practices[2] and other doubt-inducing collaborative exercises, the students learned about their environment while questioning architecture's relationship to form, performance, and natural processes. Pedagogically, rather than privileging the individual genius of the architect, experimental collaborations created opportunities for rethinking architecture's parts, constituencies, and authors. These collaborations led us to the question: how might we reinvent desert landscapes through granular devices that foster new relationships to water? To answer, we used exquisite corpses, accident-driven simulations, and habits of care as the drivers for designing in, and with, the landscapes of the American West. Ultimately, the course resulted in the construction of a 6'x8'x10' pavilion-type structure featuring: a series of gabion cages with locally sourced rocks that interacts softly with the ground by laying on it without carving any parts of it out, and which has since become an ecosystem for rats and garden snakes to play in; a "bottle garden," which hosts a series of plants that have not yet germinated, but which hopes to serve as sustenance for pollinators, birds, and other species in need of flora; and a punctured corrugated roof system, which provides shade and some shelter to the human users of the project, and which makes a spectacle of the special times of the year when it snows or rains in [City Redacted for Blind Peer Review]. These parts were tied together with a standard steel scaffolding system, reminding us of the advances of technology and our ongoing implication in the circulation of materials around the world.This exquisite corpse architecture, which created itself through the adaptation of informed and uninformed decisions by the class, continues to consider all potentials of its objectness, intended and unintended, by engaging in new modes of shared authorship.[3] While the studio ended in the winter of 2022, this project is alive and continues to become with its environment on a daily basis.

Severing Ties: A Pedagogy for Envisioning New Typologies of Environmentally-Attuned Architecture

Christianna Bennett, Rensselaer Polytechnic Institute

The relationship between architecture and landscape must undergo fundamental change to deal with the urgency of the climate crisis, adapt to changing cultural values, and support local environmental conditions. Although there has been progress in modifying architectural construction methods and implementing the use of sustainable materials, structures continue to depend on extractive infrastructure through integrated building systems such as electricity, telecom, heating, and cooling. The ongoing reliance on extractive infrastructure bonds architecture to exploitative technologies and industries, which has fundamentally altered its relation to landscape. At present, architecture relies on an abundance of fuel from distant locations to operate, and ignores its surroundings as a result. In recent design studios, I ask students to generate alternate connections between architecture and environment. Specifically, I teach students how to critically disengage from extractive processes and systems, and instead knit architecture into local ecosystems. This is achieved through critical analysis of existing infrastructure and the design of new systems. Supported by the integration of interdisciplinary perspectives, the rewiring of systems results in new, speculative architectural typologies that engage reciprocally with complex ecologies. According to this framework, students interrogate the role architecture plays in the sustenance of the environment and are challenged to design in ways that depart from the status quo. Lessons include a) direct observation and interpretation of nature, b) translation of observations and interpretation into systems-focused interventions, c) an integrative approach linking systems and objects, and d) exercises in 'making worlds' and 'futuring,' for forming speculative narratives about architecture's future role in the environment. By addressing these issues, architecture becomes an instrument for reimagining human relationships with nature and serves as the basis for forming new bonds with the environment.

This Presentation was removed and will no longer be presented at the conference.

Teaching the Circle: New Pedagogies for Exploring Materials Reuse in Design
Emily Potts, California State University, Sacramento

The increasing mandate to drastically and quickly reduce carbon emissions in order to avoid the worst-case scenarios from climate change is a call to fundamentally transform the way that architects and designers approach their work. In particular, the need to drastically curb embodied carbon on all new projects through the use of reclaimed materials and spaces, and/or very low carbon material strategies, has presented a unique challenge.(1) Most mid-career practitioners and educators were trained in a system that either ignored or deemphasized projects that focused on building and material reuse as important goals in design. This shift of focus from designing new buildings, to prioritizing the reuse of existing buildings and use of reclaimed materials requires new conceptual design thinking, visual communication strategies, and integrated design processes. In addition to the practical and technical challenges with understanding and integrating an underdeveloped circular economy, prioritizing materials and building reuse can also significantly influence the aesthetic outcomes of the work.(2)   European architect and researcher Kerstin Muller states that, "Circular construction means thinking and working from small to large."(2) Contrary to a historic emphasis on perfecting the overall building form with little constraint on materials, this new method of designing flips the script and forces the designer to identify the pieces before the whole. To draw an analogy to artmaking, the emphasis on sustainable design requires us to conceptualize architecture as less and less of a blank canvas. With materials reuse, we've left painting altogether and moved into the world of collage.   In order for us to quickly adapt to this new reality, architectural design students must be educated and trained differently than they have been in the past. Educators should become familiar with these changes, and develop new methods to guide students to critically examine and develop new frameworks for architectural ideation, communication, and process. Curriculum needs to address a baseline understanding of environmental ethics and construction and prioritize studio topics, activities, and objectives that directly challenge students to experimentally design with reclaimed materials and existing buildings. This includes connecting students to theoretical and real-world resources and exemplars that highlight design with reused materials, building adaptation, and design for deconstruction. It may also include providing students with hands-on experiences and engagement with the circular economy through building deconstruction, materials research, and experimental fabrication. This paper analyzes data from a literature review of recently published student and professional projects, case-studies, articles, research, and books in order to identify trends and trajectories in pedagogy and practice. The research also contextualizes my teaching and research in relation to emergent pedagogical practices in other schools of architecture and newly formed educational institutes who are leading the conversation on how to approach designing for circularity. With this backdrop of knowledge, this paper proposes a curated set of resources, diagrams, challenges, and best-practices to support those working to understand and implement changes in their teaching and practice.

Beyond Retreat, Occupying the Intertidal Edge

Megan L Spoor , Tulane University

Our inhabitation of coastal regions relies heavily on hard, grey infrastructure. We hold back tides, drain land, and divert rivers, damaging ecosystems and creating precarious stability for low-lying communities. As future climate scenarios exceed our existing structural defenses, we have an opportunity to redefine our relationship with the dynamic coastal landscapes we occupy. Can we shift from an approach of structural control, to one of ecological collaboration? The UK Shoreline Management Plan has identified areas along the Welsh coastline where structural defense against sea level rise is no longer viable. These communities will face large-scale relocation as hard infrastructure is allowed to fail, resulting in a loss of culture, identity, and livelihood. Responding to the absence of existing UK policies for managing displacement due to sea level rise, this session presents a spatial framework for the reconfiguration of our coastal zones. By reframing risk through nature-based regenerative practices, elevation-based zoning, and raised datum occupation, the session explores inhabitation driven by dynamic hydrological systems. What does it look like to improve our relationship with the coast, whilst paradoxically retreating from its edge?

PEDAGOGY: COMMUNITY DESIGN

Friday, March 15, 2024, 9:00am-10:30am

A Stop Worth Waiting For: How Transit Amenities Can Serve a Larger Public Good

Julia Lindgren, University of Texas at Arlington

This case study partners university architecture students with the regional transit authority, Dallas Area Rapid Transit (DART) to design and build a next-generation bus shelter prototype. DART services 13 cities through 6,800 bus stops that accommodate over 20 million riders annually[i]. Under its network plan, 74% of all residents live within a 10-minute walk of a bus stop, far greater than those who reside near a public park or community center[ii]. Bus stops are thus uniquely positioned to expand social, environmental, and economic infrastructure to areas of our cities currently underserved by public amenities. This project proposes a new bus shelter model that distributes public art, urban tree canopy, community message boards, public seating, and safety lighting to all areas of the city. This project leverages direct public engagement via focus groups, interviews, first-hand, and surveying to inform the design and construction of a shelter that enhances rider experience. The built prototype was developed with input from DART bus riders, citizen advisors, bus drivers, DART leadership, and local artists. Community input on existing and new designs validated the proposed hypothesis that shelters could serve a greater public interest than simply a place to wait for the bus. In addition to community input, an analysis of Dallas' various grid patterns, environmental research on renewable energy sources, recycled materials, heat island affects, and studies on the impact that beauty, public art, and greenery have on mental health and rider's perceptions of bus wait time influenced the shelter's design. The process and resulting design outcomes respond to rider needs at both the individual shelter and DART network scales. The individual shelter is designed as a kit of parts to enable a single bus stop to convert into a larger shelter overtime as user patterns and resources change. Shelters accommodate primary rider needs including a place to sit, wheelchair access, weather protection, and unobstructed views of oncoming buses. These features are enhanced by multi-lingual audio and lighting cues that alert riders and bus drivers in real-time, WIFI charging stations, renewable energy sources, community message boards, and safety alert buttons that convert shelters into micro resilient hubs. In addition, partnerships with local organizations to incorporate public art and one tree at every stop transforms the bus network into public galleries capable of absorbing over 330,000 pounds of carbon dioxide annually, reducing temperatures at each stop by 2-9 degrees[iii], and decreasing perceived wait time by an average of 3 minutes[iv]. These performance metrics are informed by published research and have not yet been tested in real time.   Since this project began in September 2022, it has sparked numerous conversations among DART, its riders, and architects about the value that design places in the creation of public spaces and amenities. Maximizing the impact of small-scale interventions across geographies has the potential to create population-level change at the city scale. Most immediately, this project will directly influence the next generation of Dallas bus shelters and those of other similarly situated cities.

Space For Free

Stephanie Davidson, Toronto Metropolitan University
Eira Roberts, Toronto Metropolitan University

This presentation shares the inception of a new student-driven architecture publication, a poster-zine called SPACE FOR FREE. The zine is an outgrowth of a fourth year option studio course, which asks students to use walking and close observation as a main method in order to learn from existing spaces in our city – in this case, Toronto, Canada. More specifically, students are asked to identify spaces that are available for anyone to use, for any purpose, for free – without paying an admission or the need to patronize a business.   The course and the zine emerged as a rally cry for the need for more equity in our built environment, specifically in our cities. Moneyed city dwellers and visitors have agency in our cities, but how do the rest of us experience space? What spaces are available for us to use and enjoy?   SPACE FOR FREE aims to expand what types of spaces are seen, studied, and valued within architectural discourse and practice. There are countless spaces all around us – public, private, and privately-owned-public spaces – that can be seized as studies in "evidence based" design; spaces in cities everywhere that are well-used and well-loved by a diverse population, and most importantly, accessible for free. These are spaces that are not heavily surveilled, but nevertheless feel safe. These are spaces that may not have been formally "designed" at all but are nevertheless precedents for the type of populist "polyvalent" space that Herman Herzberger describes [1]. SPACE FOR FREE is committed to documenting and studying these spaces (one per issue) to better understand them.   In addition to expanding the types of spaces that are included within architectural discourse and study, SPACE FOR FREE provides a valuable in-road for students (undergraduate and graduate, in architecture and allied disciplines) and young designers (recent graduates) to contribute to discourse. The youngest members of the design community are, arguably, the most agitated; we know that status-quo processes of designing and constructing are harmful and inequitable, and our futures are staked on the promise of change.   SPACE FOR FREE uses the humble, low-cost format of a folded poster-zine, risograph-printed locally in a small print run of 50, bi-monthly. The low production-overhead will allow the zine to be available for free. Each issue is devoted to the documentation of one space through drawing, photography, contextual analysis and a short description, written by the "discoverer" of the space. The hope is that the publication will become an ongoing resource about architecture-without-and-with-architects, broadening the scope of what is valued, studied, and even seen within the architectural community.   The conference presentation will share both the studio course structure and methodologies that lead to the birth of the zine, including significant practitioners whose ethos underlies the publishing venture (such as the writings of feminist-collective Matrix, Margaret Crawford's "Everyday Urbanism", Rudofsky's "Architecture without Architects", among others). The presentation will also share the first four issues of the zine and reflect upon the spatial observations and findings to-date.

Access + Opportunity = Empowerment: Overcoming Imposter Syndrome Through Hands-on Material Exploration

Jonathon Stevens, Florida Agricultural and Mechanical University

Equitable access to transferable knowledge is essential to the discipline of architecture. But what happens when opportunities are stifled in an evolving architectural education? This qualitative research reviews the role a theoretical process plays in empowering upper-division Historically Black College and University (HBCU) architecture students to engage in material-based architectural learning to help reduce impostor syndrome in a post-pandemic digital culture. HBCU students, like 84 percent of university students across the United States[1], were part of the 'Covid-19 remote learning' generation. During and post remote learning, several students - approximately 50 percent surveyed during this course[2] - missed their opportunity to access the experiences and knowledge that come with hands-on material exploration. By bypassing their opportunities to engage with analog materials, many students lacked the confidence to discuss architectural materiality, which could ultimately lead them to prolonged intellectual insecurities. So, as educators and practitioners, how can our pedagogies provide better access to knowledge and overcome the root causes of impostor syndrome? Through using inclusive theories and equitable experiences in a new way, I believe we can better adapt academic tools to reinforce a sense of belonging while continuing to promote diversity in our communities and environments. To empower through access and opportunities, the process below describes how a group of eleven students gained direct experience through a series of prompts used to transform their knowledge into over 150 unique physical objects. The required course began with presentations and group conversations reviewing Donald Judd and Michael Benedikt's theories and exploring the psychological significance embedded in tangible objects. Written commentaries and in-class dialogues became a venue to critically analyze the connections between architectural space and materiality through the lens of time, value, and reality. To instill self-assurance, the students engaged in the physical material exploration of new and found building materials. Each student used their experiences to create individually unique wood, cast masonry, metal, and composite 'Objects' (2.5"x2.5"x10") that emphasize their design process. A 'process,' as described by Gail Peter Borden[3], provided a physical outlet for personal growth. Several students went from only using materials in a digital environment[2] to demonstrating fabrication skills beyond basic cutting, carving, casting, and welding. During the exploration process, some students expressed their greater appreciation for the mental and physical difficulty of material manipulation.[2]Similar to Enzo Mari's thoughts on 'understanding,'[4] the students became empowered to use the intersections between critical analysis and the physical manifestations of their ideas.   Ultimately, the students developed experiential knowledge that would confidently convey their design intentions in the professional architecture environment. Over 85 percent of the students surveyed expressed that using physical material expanded their self-assurance, and they foresee using their expanded observation and making skills in the future.[5] At the completion of the course, the students understood that access to essential knowledge and experiences facilitates our ability to communicate and emphasize architectural opportunities. And through the process of discovering the transferable knowledge inherent in analog material implementation, we use self-confidence and opportunity to reflect ourselves into equitable built environments.

Blind Design Workshop: Advancing Inclusivity with Non-Visual Pedagogy
Andrew Gipe-Lazarou, Virginia Tech

Dr. Andrew Gipe-Lazarou (MArch GSD, Ph.D. NTUA) is a junior faculty member of the Virginia Tech School of Architecture, recently awarded the Diversity, Equity and Inclusion Excellence Award by the College of Architecture, Arts, and Design, for his exceptional commitment to inclusive teaching, scholarship, and research.

Building on his prior experiences as an organizer of the first-ever architecture course for the blind and a project leader of blind-accessible international travel programs, Dr. Gipe-Lazarou established the Blind Design Workshop, an annual collaboration with the Virginia Department for the Blind and Vision Impaired (DBVI), in the spring of 2022. The five-day workshop brings 15+ vision-impaired learners, aged 14-24, from across the state to participate in a series of design exercises which are prepared by students in the School of Architecture. By exploring innovative non-visual means of design communication, and involving practitioners with disability as mentors, the workshop aims to empower vision-impaired participants with the understanding that they can meaningfully impact the design of the built environment. Doubling as a professional elective, the workshop also challenges students of architecture to question the ocular-centrism / discover the multi-sensory potential of their profession and to consider the significance of accessible space-making. Dr. Gipe-Lazarou's commitment to inclusivity is also evidenced by parallel accomplishments, including his certification by the International Association of Accessibility Professionals (IAAP); the curricular impact of his school-wide 2nd-year design competition brief; advising award-winning undergraduate thesis work addressing disability and design; participation in the international Future Bodies Symposium (2022) and Including Disability Global Summit (2023); the authorship of a forthcoming article evaluating the feasibility of non-visual architectural study and practice (funded by the Center for Humanities); and participation as Co-PI in a university- and state-funded research grant to develop a mobile phone application which integrates AI to facilitate non-visual description, navigation, and alerts.

DIGITAL TECHNOLOGY: COMMUNITY AND URBANISM

Friday, March 15, 2024, 9:00am-10:30am

Phygital Mapping of Socio-Environmental Justice: From Material to Urban - An Interdisciplinary, Multi-Scalar Framework

Sina Mostafavi, Texas Tech University
Asma Mehan, Texas Tech University
Edgar Montejano, Texas Tech University
Cole Howell, Texas Tech University
Jessica Stuckemeyer, Texas Tech University

The research discussed in this paper centers around the convergence of extended reality (XR) platforms, computational design, digital fabrication, and critical urban study practices. Its aim is to cultivate interdisciplinary and multi-scalar approaches within these domains. The research endeavor represents a collaborative effort between two primary disciplines: critical urban studies, which prioritize socio-environmental justice, and integrated digital design-to-production, which emphasize the realization of volumetric or voxel-based structural systems. Moreover, the exploration encompasses augmented reality to assess its utilization in both the assembly process of the structures and the integration of phygital (physical and digital) data with the physical environment. Within the context of these research scopes, this paper introduces FabriCity-XR as an interactive phygital installation. In addition to presenting an overview of the integrated research driven and performative design to production methodologies, the project showcases the practical implementation of web-based augmented reality trails, eliminating the requirement for external applications for interaction. This approach allows users to seamlessly navigate and engage with phygital content overlaid on physical objects using their personal smart devices. The result is a captivating and immersive user experience that effectively merges the physical and digital realms.

Smarter Cities: Exploring the Applications of Emergency Management through Digital Twin Technology

Bakr Aly Ahmed, North Dakota State University

Within the past 50 years, there has been a significant increase in the number of natural disasters and the global economic losses associated with them. The United States alone has accounted for more than one-third of these losses due to various weather-, climate-, and water-related causes ("Weather-related disasters increase over past 50 years" 2021). Responding to these emergencies can often be dangerous, unpredictable, and highly complex. Moreover, humanitarian efforts can grow in complication if the disaster forms quickly, such as in the case of a fire or flash flood, or if it occurs in a densely populated urban area or both. In order to adequately address these disasters, many cities employ Emergency Management (EM) processes in some capacity. According to the Federal Emergency Management Agency (FEMA), Emergency Management (EM) is defined as "the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters." ("Emergency Management: Definition, Vision, Mission, Principles" 2022). An example of this framework comes in the form of an Emergency Operations Plan (EOP). An EOP describes actions to be taken in response to natural, man-made, or national security hazards, detailing the tasks to be performed by specific agencies at projected times and places based on established objectives, assumptions, and assessment of capabilities. ("City Emergency Plan" 2022). While these plans are often adequately effective, there often exist complications that can weaken the efficacy of the disaster response. These concerns include staffing issues, inefficient deployment of resources, fractured communication, and lapses in hazard identification and reporting. The evolution of the smart city presents an opportunity to use technology to address these challenges by assisting Emergency Personnel in disaster planning and augmenting the overall effectiveness of disaster responses. One such solution could be through the implementation of Digital Twin (DT). When a high-risk disaster situation occurs, such as flash flooding, hurricane, or building fire, every second counts. Several gaps exist in the functionality and efficiency of current emergency management within many U.S. cities. Such issues include but are not limited to deficiencies in inter-organizational communication, inefficient deployment of resources, and potential weaknesses in public notification methods. One possible solution to bridge those gaps is through the application of Digital Twin technology. This paper explores the potential integrations of a Digital Twin City with existing emergency management systems to mitigate large-scale, complex disaster situations within the built environment. The research focus on the large-scale concept of a Digital Twin City (DTC), its characteristics, advantages, developmental process, and potential role within an Emergency Management Plan (EMP). Utilizing these systematic advantages of a Digital Twin City (DTC) can assist in maintaining the continuity of EM services during multiscale, urban disaster situations and help optimize each of its constituent phases of planning.

From Urban Greenery to Living Standards: Interfacing Architectural Types and Socioeconomic Environments through Generative AI Models

Daniel Koehler, University of Texas at Austin

In this study, we employ large-scale-text-to-image (LLI) models to analyze building typologies in relation to environmental contexts. Here, types delineate deep compositions of places that intertwine socio-economic histories with physical structures. Rather than mere representations or models, types encapsulate various facets of a site into a specific term, acting as strategic interfaces bridging architectural design and policy-making. Moving forward, can typological thinking assist in understanding generative-AI workflows from an architectural perspective? Moreover, can we redesign types as instrumental interfaces once again linking design to their environmental contexts? Framing our investigation, we examined the compositional characteristics of AI-generated images of buildings located in various cities. We generated and segmented a synthetic dataset of 150,000 images into individual building segments, conducting a statistical analysis of compositional features across 5,600 cities. Our objectives were threefold. First, whether LLI models can realistically portray diverse local types and identify limitations. Second, to identify key compositional metrics for big-data analysis and their characteristics different from previous compositional notations. Finally, through a case study, we demonstrate how entanglements between form and synthetic data offer unique insights for real-world applications. Specifically, a compositional reading enables inferences about the carbon footprints of places and cities. Notwithstanding inherent biases and constraints within the dataset, our findings posit that synthetic databases provide a more nuanced analytical foundation than their conventional counterparts. The computational articulation of types through similarities of compositional features shows very specific attributes that avoid linear classification regimes like homogeneous to heterogeneous. Initial quantic queries suggest this method analyzes environmental attributes more closely tied to neighborhoods and projects than entire cities and contexts, reaching a more diverse resolution.

Neural Image Classifiers for Historical Building Elements and Typologies

Andrew Witt, Harvard University
Eunu Kim, Trimble, Inc.

New technologies of machine vision and artificial intelligence (AI) are opening fresh avenues to catalog and compare the entire corpus of built architecture. While neural net technology is rightly embraced as a promising generative paradigm for architecture, it also holds enormous promise for historical work, notably the automatic scanning and organization of as-built imagery and video of buildings and cities. We argue that one may apply AI-driven machine vision tools to scan and classify architectural imagery based on stylistic and morphological considerations. Combined with data science methods, such tools enable a comprehensive view of historic architectural features and types

DESIGN: BLURRING DOMESTIC/TERRITORIAL LINES

Friday, March 15, 2024, 9:00am-10:30am

SPLENDID VACANCIES

Marcos Parga, Syracuse University

In recent years, soaring real estate markets have created a worldwide housing crisis. The current boom was predictable: high demand, low supply and a dysfunctional economy in which wages are stagnant, added to restrictive zoning and poor public policy, have turned housing into an artificially scarce commodity. SPLENDID VACANCIES stresses the critical role of public vacant and under-utilized urban land in countering rampant real estate speculation by exploiting the potential of small-scale infill residential buildings to contribute to urban centers' affordable housing needs. Undervalued by developers due to their small size and odd shapes, most of these lots represent a viable alternative to suburban sprawl and serve as the ideal background for experimentation with alternative modes of collective living where use value is prioritized over commodity form, making the resultant buildings less fungible as assets. Through a collection of small-scale limited-profit residential projects that occupy leftover spaces and react to specific conditions in different cities and their neighborhoods across the US, the proposal explores alternative ways of initiating, funding, and operating buildings dedicated to housing in metropolitan centers. The final strategy was developed in three parts: as an urban strategy that uses urban voids as testing grounds for communal governance, as a site-less prototype that fosters new forms of collective dwelling, and as specific projects resulting from its application to existing sites. The basic prototype has been designed as an elastic and evolving framework for all the aspects of building, from construction to ownership, to accommodate fluid living arrangements. Conceived as a repeatable structure, it can be implemented in different infill sites, mainly long and narrow, and in various configurations, becoming potential nodes of activity within the neighborhoods. Particular attention was given to the configuration of the ground floor, the role of the circulation core and the central lightwell as catalysts for productive social friction, and the rethinking of privacy dynamics that subvert inherited typological rules. The section is a critical element of the project: the proposal questions pervasive myths about privacy and community by breaking up the traditional apartment for the nuclear family into expanded spaces (day rooms) and compressed spaces (night rooms) assigned to different floors. To facilitate spatial flexibility and programmatic promiscuity, the proposal goes beyond height restrictions to explore new existenzminimum as parts of a larger system that dissolves the dwelling unit into gradients of privacy and facilitates shared living. From the unregulated space of a mezzanine to multistory clusters, the prototype offers the possibility of alternative decentralized domesticities in which individuals live across the entire building height. The first case study is NYC, a city that is well known for its socio-economic inequalities, the prevalence of unoccupied public land, and a long-lasting housing crisis, among other pressing issues, and therefore, a fertile site for experimentation on housing alternatives, new collective forms, and urban ground activation. The first two implementations occupy public vacant lots owned by the New York City Department of Housing, Preservation, and Development in Upper Manhattan, in Harlem and El Barrio neighborhoods.

Adapting Boundaries: Maintaining Small Retail Strip Malls While Expanding Affordable Housing

Mitchell Hubbell, Tulane University

The strip mall is a ubiquitous building type across North America. These structures function as blank slates for any commercial operation to fill their shells, from the original grocery and retail tenants of the mid-20th century to today's business and healthcare retrofits. In many of these sites, a boundary exists between the large-scale commercial development and the small-scale, single-family residential behind. A result of single-use zoning, this boundary is often resolved with a privacy fence separating grassy lawns from loading docks. Adapting Boundaries addresses the recurrent boundary condition between a strip mall's rear face and the neighborhood behind, promoting high-density, low-rise housing and encouraging neighborhood connectivity. The site of investigation is a strip mall in the Los Angeles neighborhood of North Hollywood. Los Angeles became the investigated city for its legacy of post-war urbanism, its history as the birthplace of strip malls, and the recent California legislation promoting commercial to residential site conversions. The project offers an alternative to the large-scale redevelopment of retail centers with incremental housing that preserves small-scale retail tenants, often vital to communities. Designed to fit on sites with limited depth, the primary living space of the thin housing unit is elevated for ground-level porosity and the flow of existing activities beneath. Strategies developed in this project can be distilled and replicated on strip mall sites across the North America to provide housing for communities in need.

Micro-Trinity Homes; Affordable, Sustainable, Urban Infill Housing

Craig Griffen, Thomas Jefferson University

The numbers defining our current housing crisis are daunting. In 2020, 30% of all households had "unaffordable" rent or mortgage payments, defined as exceeding 30% of monthly household income, and more than 1 in 7 households paid over half of their income on housing.1 There is a national shortage of 7.3 million affordable and available rental homes for extremely low-income renters.2 And on top of this, population demographics are changing with greater demand by the Missing Middle sector of people, who do not fit the typical family structure and make a decent income, yet can still not find affordable housing.3 While this presents a major challenge, there are large areas of our cities with abundant vacant land that have enormous potential to correct this problem. For example, of the approximately 34,000 rowhome lots in the Lower North district of Philadelphia there are roughly 8,000 vacant lots and 3,000 vacant structures, about 3 in every 10 rowhome properties.4   Rather than just replace the former cramped, dark row homes, this project proposes a new typology of small microhomes reoriented to provide greater access to sunlight, fresh air, and green space. Not every location is feasible for this approach, but the Lower North district is ideal for several reasons. First, it contains an abundance of scattered, vacant pockets of property with at least 3 adjacent lots on north-south oriented streets, which are necessary for this design. (Fig. 1) Second, the land prices are currently low enough to make multiple lot purchases financially feasible. And third, the area's median household income is well below the city average so many who cannot afford the new market-rate homes currently being built could better afford these smaller units. Looking at just one four-square block area of this district, there are at least 45 vacant sites with 3 adjacent lots that meet the requirements. Since this area represents only 2% of the district, there are enough potential sites to develop hundreds of these affordable homes for local residents and thereby avoid the gentrification currently happening in neighboring districts. (Fig. 2) The Micro-Trinity home is based on the regional Philadelphia Trinity House typology in which 3 single rooms are stacked vertically to create a house with a very small footprint. Rather than 3 homes lined up along the street front, 6 microunits are repositioned along the northern lot boundary with large south-facing windows with access to a large communal green space formed from the other 2 lots. (Figs. 3 & 4) The southern orientation ensures all units have abundant sunlight for passive solar heating, daylighting and PV power. Operable windows for cross ventilation and passive shading from overhanging balconies also help the resilient design strategies. (Fig. 5) Beyond inherent savings from its small 25m2 area that utilizes efficient airliner storage strategies, costs are further reduced through pre-manufactured, mass timber modular construction. However, 2 or 3 modules can be combined to create 50m2 and 75m2 units to accommodate a range of diverse family structures.

Innovative Solutions for Inclusive Housing: The Extended Family Home as a Model for Change

Jonathan Hanna, Lawrence Technological University

This project delves into the intricate challenges posed by the North American Single Family zoning, illuminating its unintended shortcomings in fostering sustainable densities and inclusivity, particularly amongst the increasing diasporic communities. Rooted in the theoretical foundations laid by notable thinkers such as Pierre Bourdieu and Aldo van Eyck, and drawing inspiration from indigenous architectures and spatial practices, the study advocates for the introduction of the "Extended Family Home" typology. This proposed housing model is meticulously designed to encapsify the complexities of diverse family structures and align with sustainable development aspirations. Three intervention sites characterized by distinct West Asian Diasporas and unique zoning requirements, located in Bayonne, NJ, Skokie, IL, and Sterling Heights, MI, were selected. The proposed architectural modifications within these specific locales aim to bridge the extant gap between current housing provisions and the multifaceted needs of the diaspora. Every proposed design, whether it's the Bayonne Box Addition's innovative use of structurally insulated panels, Skokie's transformative split-level extensions, or the expansive straw bale constructions in Sterling Heights, encapsulates a nuanced amalgamation of privacy, communal living, and economic efficiency. The Extended Family Home stands distinguished in the contemporary housing discourse, navigating the intricate balance between co-housing efficiencies and the autonomy of individual family nuclei. The project underscores a pragmatic yet elegant solution, weaving shared and private spaces into a cohesive living experience. Its design innovations facilitate the potential for additional rental income, offering economic resilience and adaptability to changing family dynamics. In the market domain, the Extended Family Home fosters a symphony of economic and spatial efficiencies. It offers builders a unique opportunity to amalgamate tried-and-true building techniques with avant-garde designs. This study unveils a housing model where economic feasibility for occupants intertwines harmoniously with a diversified and adaptable housing inventory for the market. On the municipal front, the study accentuates the flexibility and adaptability of zoning codes, akin to the evolution seen in the Accessory Dwelling Unit laws. The design proposals tendered in this project offer municipalities a roadmap to augment existing codes, expanding Floor Area Ratios and moderating rear yard setbacks, all while maintaining the aesthetic and communal essence of neighborhoods. In conclusion, the Extended Family Home emerges as a pivotal paradigm, weaving the intricate tapestry of varied family structures, economic efficiencies, and sustainable living within the existing urban fabric. The case studies underscore a harmonious coexistence, signalling an intrinsic progression in urban housing narratives. This project stands as a testament to the adaptability and resilience of architectural and societal ecosystems, proffering a vision of an inclusive, sustainable future of urban living, where the complexities of cultural diversity are not just acknowledged but celebrated and integrated into the foundational fabric of housing design and community living.

Vertical Farming in Vacant Buildings
Christine Allen, University of the District of Columbia

Global population growth means we need more food production; we need more land to achieve more food production or efficiency. We cannot produce more land, so the solution is to build up instead of out. Solving for hunger, cost, land, and community needs, building vertical farms in vacant buildings can catalyze a brighter future. This solution provides more nutrition to those lacking it and helps those who face hunger daily, including the 1 in 7 children that Feeding American says. There are over four thousand vacant properties in the District of Columbia and several food deserts across five wards. There are over 33 million square feet of vacant space in DC, and their solution for vacant properties has been regarded as unstable. This project examines the feasibility of using vacant buildings to create vertical farms by developing a cost analysis design and using two sites as an example. Through the project research and analysis, the price reduction of produce for the average person varies between saving 60-75%, which can lead to healthier communities. The addition of educating the communities to give them more options in their own lives doubles as an equitable solution. Overall, taking vacant building stock and creating vertical farms will help ensure struggling communities have more opportunities by measuring the situation, designing a solution, and building for a better future.

SOCIETY + COMMUNITY: RACE, MEMORY, AND RECKONING

Friday, March 15, 2024, 9:00am-10:30am

Architectures of white supremacy: measuring racism in college campus design

Shawhin Roudbari, The University of Colorado Boulder
Aspen Randolph, The University of Colorado Boulder
Chloe Nicklas, The University of Colorado Boulder

In her study of law schools in the US, sociologist Wendy Leo Moore identifies those academic institutions as hegemonic white spaces. Drawing upon the racist history of the legal system and the legal profession in the US, she shows that law schools are complicit in upholding white supremacist ideologies. In her study, Moore also noted the role that the architecture of law schools played in reproducing racism. In her analysis, she cites classroom seating layouts, symbolism in interior design, and alienating circulation through the building. Scholars of race and space studies offer powerful theoretical frameworks for understanding space's role in perpetuating, inflicting, and creating racialized harms. But most do so by considering urban scales of space (e.g. the role of redlining or urban renewal). What is unique about Moore's study of white spaces is her attention to architectural scales of space. In an effort to deepen this thread of inquiry, in this paper, the authors investigate how members of a university community experience white and racist spaces of a predominantly white campus. The authors conducted twenty participant-led go-alongs where participants guide walks through the campus spaces they navigate. Participants reported ways architectural elements such as material, spatial hierarchy, threshold, and framed views perpetuate white supremacy. This research aims to document ways that members of campus communities experience white supremacist architecture. The findings of this project will contribute to theorizing ways white supremacy is reproduced at architectural scales of space.

Monuments, Memorials, Landmarks, and Symbols: Conflicting Values in the American Narrative

Mark Blumberg, Auburn University
Gorham Bird, Auburn University
Jennifer Pindyck, Auburn University
Mary English, Auburn University

The recent social upheavals regarding race relations in the US has sparked dialog about the role of monument and memorialization in the built environment. Past heritages that have been embedded in collective memory in the form of statues in the public spaces of our cities have become dense nodes of controversy in various forums of the national dialog. Statues, and the spaces in which they are located, have been swarmed with bodies and voices on two sides of the issue; it should stay, or it should go. Architecture's parallel in this dialog comes in the form of buildings' official registrations as national historic landmarks; this is a post-memorialization with an intent of preserving architectural style, form, and historical vernacular. The issue in this case is that, often, historic societal and cultural events and/or practices become embedded into architectural form as symbols of their victories, defeats, or atrocities. This project investigates architecture's role as marker of historical development between its original formal intention and its societally/culturally applied symbolic communication, and whether past disruptions in the fragile fabrics of humanity call for disruptions in memorialized architectures' relationships to current societal trajectories. Statues, memorials, monuments, landmarks, historic places, historic markers and more all occupy various built environments through which architects, landscape architects and designers practice their impact on society and culture. Many of these represent and embody memories and narratives that are past, present, and likely future spaces of conflict regarding which historic societal or cultural group has more right to the unfolding of these narratives. Recently, we have seen this conflict arise specifically over statues that are carriers of American heritages associated with inhumane, racist belief systems. While these statues were erected in years past with intention of memorializing the significant people and events associated with these belief systems, their presence is being challenged to script their place in a narrative of civil progression in the form of removal from the built environment, and therefore removal from spatial and formal historic record. Over the course of six weeks second-year architecture students explored the intersections of history, symbolism, form, and design within the context of a plantation house registered as a national historic landmark. When asked to respond to the historical context, situating a new educational facility on the same property as a structure that played a significant role in a period of human enslavement, yet has been recognized as a significant piece of American architectural culture proved an intriguing challenge. To what level should new architecture support or obstruct the original form of the plantation house given its standing in current society as a place of inhumanity? Is architectural form that embodies this symbolism worthy of remembrance? What role does the architect play in affecting our built environment as it collides with our current social and cultural disruptions? Are landmarked buildings statues that should be removed? If not, can they be amended to engage more accurate accounts of the American narrative?

Undoing White Settler Designed Cities: The Agency of Mapping with Racialized Immigrant and Refugee Women in Canada

Natalia Escobar Castrillon, Carleton University

Although urban populations are becoming increasingly diverse, most cities are not designed to provide equitable access to urban amenities and infrastructure. [1] Twentieth-century Western urban design standards were rooted in Eurocentric ideals, primarily addressing the needs of White, economically secure, able-bodied, neurotypical, cis-gender, heterosexual males. However, current political and economic instability, the ongoing health crisis, and the climate and environmental crises are radically changing the global demographic distribution [2] making cities even more unsuitable for an increasingly diverse and diasporic urban population. One key aspect of designing equitable cities is understanding the different embodied experiences of marginalized populations. However, at present, city planners rely on quantitative and abstract urban studies that continue to render other social groups invisible. [3] This issue is particularly relevant in countries such as the settler state of Canada, where projections estimate that by 2041, one in three people will be a current or former immigrant. In addition, two in five people and one-third of the total female population will belong to racialized populations. [4]   This study focuses on Ottawa-Gatineau, two middle-size neighboring cities that mirror national demographic trends. I combine two mapping methods to document the urban experiences of diasporic communities. The first method involves using Geographic Information Systems (GIS) to map census data, creating demographic maps of Ottawa-Gatineau. The goal is to identify urban areas hosting the highest percentage of the population at risk of urban exclusion. Based on the demographic maps and on previous relationships with communities in Ottawa, I selected Overbrook and Cyrville, two neighborhoods with a high density of economically insecure and racialized immigrant and refugee women where the study of urban equity is more relevant. The second method involves inviting community members living in this urban area to a participatory mapping workshop. The goal is to assess the adequacy and accessibility of urban infrastructure based on their distinct experiences. Participants overwrite a map of the neighborhoods with their experiences of urban amenities and infrastructure. This is an empowering technique that emphasizes their capacity to lead change. In addition, by prioritizing their first-hand experiences, the study positions community members as the main bearers of knowledge. [5] The assessment, driven by the interests of participants, addresses transportation, amenities, services, and housing. The study shows a clear divergence between existing quantitative studies and the qualitative study of the participatory map. While quantitative studies describe the presence and proximity of urban infrastructure in the neighborhoods as above the city average, the comments on the map show that this infrastructure is inadequate or inaccessible. Participants redefine accessibility beyond the mere presence and physical proximity of infrastructure. Rather, they include questions about cultural, religious, and linguistic diversity, gender and age inclusivity, safety, affordability, schedule flexibility, cleaning and maintenance, reliability of transit and services, the presence of social diversity and connectivity, and the fundamental role of existing networks of social solidarity and mutual support. The study reclaims the agency of these experiences to reinvent places, make visible racialized and gendered systems, and design more equitable urban futures.

Aging Against the Machine

Neeraj Bhatia, California College of the Arts
Karen Kubey, University of Toronto
Ignacio González Galán, Barnard College

Aging is not a problem to be solved. The problem is the range of barriers—physical, social, financial, and cultural—that make it difficult to grow older with dignity and in community.

Older people in the United States are often either isolated at home or subjected to institutionalized forms of care. "Aging Against the Machine" advocates for alternative community development scenarios for aging that open up multiple options for care, improve physical access to the city, enhance resource sharing, and strengthen community ties.

In West Oakland, a culturally and racially diverse neighborhood, older residents are faced with precarious living conditions, insufficient public infrastructure and amenities, and limited caregiving options—effects of the legacies of redlining and disinvestment in social programs. Despite these challenges, residents are working together to advance the common good.

The area has long been a testing ground for civil rights movements and counterculture communities, producing alternative housing models, mutual aid networks, and initiatives—from Black Panthers programs to work inspired by Center for Independent Living resources for people with disabilities. Individual and collective initiatives continue to improve the neighborhood, including the community development work of the East Bay Asian Local Development Corporation and San Pablo Area Revitalization Collaborative.

"Aging Against the Machine" builds upon this past and ongoing work. The project has been developed in solidarity with local residents, who contributed through a series of roundtables and conversations. Making visible, connecting, and expanding local initiatives and amplifying resident voices, the project manifests through proposals in a range of scales—from interior home renovations to collective land ownership models and intergenerational housing projects. Diverse spaces for commoning and networks of care at the scale of the building and the neighborhood are integrated with public social programs and mutual aid initiatives, ultimately contributing to an intersectional, community-based approach to aging.

ECOLOGY: LAND USE ECOLOGY

Friday, March 15, 2024, 9:00am-10:30am

Building Integrated Agriculture Simulation (BIA-SIM)

Manabendra Nath, Rensselaer Polytechnic Institute
Josh Draper, Rensselaer Polytechnic Institute
Alexandros Tsamis, Rensselaer Polytechnic Institute

Agriculture consumes 30% of the world's fossil fuels and 70% of freshwater. About one third of all greenhouse gas emissions come from the Built Environment, and uses about 20% of total energy. Urban Agriculture promises to minimize food and water waste utilizing Building Performance Simulation (BPS) tools that assess crop yields, water usage and energy needs for Building Integrated Agriculture (BIA). However, BIA may attain better efficiencies if agriculture and buildings share their waste products. Here, we introduce Building Integrated Agriculture Simulation (BIA-SIM), a framework for software that visualizes and quantifies early-stage design outcomes of BIA that combines circular waste flows of building and farm. Users can determine which resources - food, water, air, and energy - are most important to co-optimize based on their ecological and economic concerns. BIA-SIM user input includes location, 3D site model, site and building details, number of occupants, farm type and crops. Greywater, CO_2 from occupants and building energy usage are calculated. Outputs demonstrate how a software framework informed by an extensive database of plants, their properties and their farming requirements can be utilized to identify, design and exploit feedback loops between building and urban agriculture waste products. To demonstrate several use scenarios, a site in New Delhi, India was chosen for an urban agriculture-integrated residential building. In one example, using 60% of building grey water for irrigation of tomato, we found 47% of the maximum buildable surface area would be needed for tomato production. More than 69% of the CO_2 emitted by building occupants could be absorbed, and the plants' thermal mass could save 50% of cooling energy using farm layouts that, in turn, enhanced food output based on solar exposure. Several other scenarios will be shown that demonstrate the broader benefits urban agriculture can have for the built environment beyond food production.

THIS RESEARCH PRESENTATION IS NO LONGER BEING PRESENTED

From the Ground Up: Regenerative Regional Design in Alabama Black Belt
Samuel Maddox, Wentworth Institute of Technology

This design-research studio, entitled "From the Ground Up," is a critical investigation of regenerative design at the regional scale. The context of this investigation is the Alabama Black Belt, a narrow socio-geographical region measuring only about 30 miles in width and stretching across central Alabama. The name "Black Belt" was given to this patchwork of forest and prairie in the early 19th century as a direct reference to its dark, exceptionally fertile topsoil. In time, this rich soil set off a chain reaction, enabling high rates of labor-intensive monocultural cotton production which in turn contributed considerably to the concentration of enslaved Africans in the region. The result of this rampant economic growth and swift contraction following the collapse of the Confederacy has since resulted in a regional legacy of racialized poverty, enduring white supremacy, and pervasive neglect of basic human rights. It is with this historical context front of mind that the studio crafted a masterplan for the region through a network of interrelated architectural interventions. The studio capitalizes upon the recent passage of the Alabama Black Belt National Heritage Act (H.R. 3222) and the forthcoming construction of I-14, part of the Bipartisan Infrastructure Bill, by proposing an ecological infrastructure corridor that envisions the new highway as emancipatory as opposed to oppressive. New roadways intertwine with conservation areas, restored Black Belt prairies, and biking and hiking paths. A series of highway-side interventions connect passing motorists with culture, history, and commerce deeper within adjacent rural counties. The many design interventions proposed by the students—ranging from ecological sanitation infrastructure and interspecies migration corridors to community-supported agriculture distribution centers and community-land-trust-driven development for Civil-Rights-era towns—challenge normative perceptions of rural space as zones of extraction, disposal, and retreat and, instead, posit the rural end of the transect as a place for contemporary and future human flourishing.

Places & Plants: Exploring Weeds And Other Self-Seeded Plants As Architectural Forensics

Noémie Despland-Lichtert, University of Arizona

While much of contemporary architectural discourse around plants tends to focus on their aesthetic aspects, origins, and potential uses—such as to provide ornament, drought-resistance and/or cooling, etc.—self-seeded plants, weeds and other undesirables tend to be less of a direct subject of interest and object of study within the discipline.   This paper proposes an alternative relationship between architecture and plants, in which urban and self-seeded flora are used as forensic material and studied as evidence of urban change, spatial politics and movements of people, ideas, and construction materials. For example, it looks at seeds traveling with construction materials, or under trains, as well as plants resurfacing as a consequence of bulldozed or demolished sites. The research argues that plants, rather than simply a soft landscape material counterpoint to the concrete reality of building, can be used to study the resilience of landscapes and uncover site-specific histories.   Specifically, the paper introduces a series of case studies via the description of participatory workshops hosted in Canada, the United States and Germany developing a methodology for fieldwork, community engagement and oral history through the careful investigation of a chosen site and its weeds. The methodology also serves to question the so-called "vacant" and "abandoned" nature of the chosen site within the larger context & discourse about public revitalization and other gentrification endeavors. By reframing weeds as valid and worthy of interest, this paper contests the devitalized or under-vitalized nature of chosen sites by opening conversations around social, public and environmental interactions at large.   Ultimately, this presentation also explores a range of discursive models to complexify revitalization discourse, articulating a nascent model for public engagement with architecture and site-specific histories through urban botany.

PEDAGOGY: IMPACT OF DIGITAL TECHNOLOGY

Friday, March 15, 2024, 11:00am-12:30pm

The ChatGPT Effect: Rethinking Architectural Pedagogy in the AI Age

ANTHONY BRAND, University of Auckland

Can the architectural classroom harness the power of advanced text-generating tools? This paper delves into the dramatic shifts spurred by these tools in architectural pedagogy, with a particular focus on OpenAI's ChatGPT. It underscores the pressing need to reconfigure our pedagogical strategies as we grapple with the profound implications of such technologies for traditional essay-based assessments. The advent of these text-generating tools in the academic realm presents two distinct paths for the future of architectural pedagogy. We could revert to traditional, invigilated examination methods, a choice fraught with challenges like exacerbating students' exam anxieties and promoting rote learning. Alternatively, we could embrace progress, acknowledging the inevitable influence of these tools on student work, and pivot assessment strategies towards elements that currently elude these technologies – metacognitive and soft skills. This investigation acknowledges the ethical dilemmas of tool-assisted work, from blurred boundaries of authorship to potential inequities as students with access to superior tools gain an advantage. Yet, amidst these considerations, the study emphasises the enduring importance of a robust grounding in history, theory, criticism, in crafting socially meaningful, utilitarian, and life-enhancing architecture, even in the face of these tools' transformative influence. Drawing on firsthand experience and empirical data from a restructured History, Theory, and Criticism course at a tertiary institution, this paper explores student feedback and how their perceptive and expectations of working with generative tools might be better aligned within an academic context within a supportive, ethical and transparent framework. This perspective offers a glimpse into the potential of a pedagogical model that incorporates these tools while preserving the primacy of critical thinking and research skills. As we navigate this evolving educational landscape, this study underscores the imperative of preparing our students not just for the architectural challenges of today, but for the tool-enhanced realities of tomorrow.

Infilling the Missing Middle: Leveraging Scripting Tools to Identify Small-Scale Odd Lots

Nate Imai, Texas Tech University
Matt Conway, University of California, Los Angeles

This paper examines the potential for small-scale oddly shaped lots to address cities' need for "missing middle" housing options through infill development. Defined as "a range of multiunit or clustered housing types, compatible in scale with single-family homes," missing middle housing bridges the gap between single-family homes and apartment buildings to "meet the growing demand for walkable urban living, respond to shifting household demographics, and meet the need for more housing choices at different price points."[1] This investigation frames the development of digital cartographic scripting tools as a way to disrupt the lack of housing options in many cities today. By utilizing these software tools to identify small-scale odd lots, architects can engage planners and developers to create diverse housing types currently not being offered through public and private development. The paper will document the methods and results of a Spring 2023 second-year Master of Architecture studio that leveraged small-scale odd lots to provide innovative housing solutions for downtown urban areas. Infill housing development is gaining momentum in many cities as seen recently in Chicago's Come Home: Missing Middle Infill Housing competition and Los Angeles's Low-Rise: Housing Ideas for Los Angeles design challenge.[2] In this course students developed custom mapping tools that analyzed GIS data and shape metrics to locate a set of parcels for testing and applying architectural strategies at an urban scale. The studio was situated in one of the fastest growing cities in West Texas and responded to its recently adopted masterplan and new form-based zoning code. In the first phase, students worked in teams to conduct case studies on precedent projects to develop rule sets for describing and measuring odd lots. In the second phase students worked collectively to learn and develop computational cartographic tools for identifying and representing downtown small-scale odd lots and their potential buildable massing. In the third phase students worked independently to customize the mapping tool to identify and rank a set of thirty-six parcels that best addressed a housing demographic of their own choosing. In the final phase students developed a design strategy that was applied at an urban scale across all thirty-six sites and at an architectural scale among two select parcels. In parallel to the work in studio, students engaged with city officials from the Tax Increment Financing District and Planning Department to understand local policy plans for future urban growth. Additionally, over spring break students visited New Orleans to study contemporary projects that leverage leftover lots to provide novel housing solutions within the city. This studio was conducted in collaboration with the City, and final projects were presented by students to a group of officials that included the City Council, the Tax Increment Finance (TIF) District Board, and local real-estate professionals. This paper will document the studio's methodology, student outcomes, and discuss the ways the integrated approach developed within the class can serve as a method for leveraging scripting tools to develop missing middle housing solutions in downtown urban areas.

This presentation was removed and will not be presented at the conference.

Beyond Precedents: A Cross-Disciplinary Approach to Text-to-Image AI
Camille Sherrod, Kean University

Precedents serve an important role as a source of knowledge that both drives a project and justifies it. For students early in their design education, the ability to learn the importance of precedents through exploration of new technologies remains a valuable part of the design studio pedagogy. As a departure from what Goodman1 identifies as the two traditional features of architecture, practicality and aesthetics, the introduction of AI platforms like Midjourney and Leonardo.Ai provide an opportunity to use semantic frameworks to challenge the contextual appropriateness of iconic aesthetics and forms. When used for reference making, this raises the question: can design be created solely on precedents? This project showcases examples from a cross-disciplinary workshop where undergraduate architecture students were tasked with transforming informal interviews gathered from marginalized communities throughout New Jersey into text-to-image AI software prompts as part of the design studio process. The project's primary goal is to contribute to the archival of early text-to-image explorations by organizing and categorizing the resultant resident-driven AI-generated images. The project also aims to inform new teaching methodologies that embrace cross-disciplinary approaches to AI and language development. By critically examining the generated images and their ability to represent the lived experiences and aspirations of marginalized communities, students incorporating AI in the design ideation process can improve their work, aiming towards more meaningful, culturally-informed precedents and subsequently more appropriate design solutions.

Digital Technology: Data Perfomance

Friday, March 15, 2024, 11:00am-12:30pm

Carbon Design Bottlenecks: An Empirical Taxonomy Of The Challenges Integrating Carbon Data In The Architecture Practice

Halina Veloso e Zarate, Delft University of Technology (TU Delft)
Manuela Triggianese, Delft University of Technology (TU Delft)
Javier Cuartero, KAAN Architecten
Jantien Stoter, Delft University of Technology (TU Delft)
Renata Gilio, KAAN Architecten

With the growing demand for sustainable accountability, the European Directive 2014/24/EU (EU 2014) pushes architects to deliver Building Information Models (BIM) as a part of procurement processes for public buildings. In the Netherlands, BIM model data is relevant to the building permitting process, which involves an environmental performance calculation (MPG). This assessment takes into consideration the embodied carbon of materials in a building. Although this analysis is performed by a qualified expert in late design phases, architects benefit from integrating carbon data in early design decision-making. Design methods supported by Life Cycle Assessment (LCA) values are needed before involving expert collaborators, and not only when applying for a building permit.   The existing carbon assessment tools require detailed data from BIM models, which are often not available at early design phases. Simplified tools have been discussed in theory, and explored in their potential applications, however, there lacks scientific literature discussing the hurdles designers face in their attempt to create such tools in practice, for their internal use throughout early design phases.   This paper focuses on the architecture professional practice and design methods supported by digital and computational technologies, regarding embodied carbon data. It investigates the challenges in integrating embodied carbon data in the design workflow, through the development of a digital tool made by designers, for designers. This paper conducts an empirical investigation within a Rotterdam-based architecture office, with a broad portfolio in BIM usage and public building projects, to identify and categorize the factors affecting carbon data integration into the design workflows. It proposes a taxonomy of challenges within the architecture office, to better communicate the designer's needs to the data providers and software developers with architects as a target user. Amongst the bottlenecks encountered are: access to data (data inclusiveness), data literacy and connecting data usage with design decision-making.

Developing A Building Identification Tool To Support Mass Deep Energy Retrofits

Hetong Shen, McGill University
Thomas King, McGill University
Frédéric Verrier-Paquette, McGill University
Michael Jemtrud, McGill University
Loic Ho-Von, McGill University
Frank Suerich-Gulick, McGill University
Daniel Chung, University of Toronto
Gabrielle Goldman, McGill University
Ruoqi Wang, McGill University

Deep energy retrofits (DERs) are recognized as a critical strategy to reduce the building sector's greenhouse gas emissions [1, 2]. While the existing market supports bespoke deep retrofit projects, the necessary resources and workflows to expedite DER through long-term, sustainable project pipelines remain largely underdeveloped. An important barrier is the lack of disaggregate, centralised, and high-quality building data to qualify and quantify the existing condition of the building stock and deep retrofit market demand [3]. Specifically, data characterising building envelopes—from construction, form, material, and openings to renovation history and overall fitness—are widely inaccessible. A tool that collects individual building information at a regional scale is imperative to both identify high-potential candidates for project pipelines and build a compelling value case for mass DER.   This paper describes the Building Identification Tool (BIT): a web application that presents users with building streetview and satellite imagery coupled with property tax assessment data [4] to characterise individual buildings' DER potential and build a useful database. The current workflow comprises three steps: 1) data preprocessing; 2) visual inspection of building data and imagery guided by a multi-criteria decision-making (MCDM) survey completed by the user; and 3) recording appropriate streetview and satellite images that, associated with the survey data, can later be used to automate parts of the workflow with machine learning (ML).   During the preprocessing step, we parse and geolocate property assessment roll data to input a subset of buildings into BIT according to location, land use, year of construction, type of ownership, number of dwellings, and other general building characteristics such as number of storeys and gross floor area. Data preprocessing also includes aggregating individually listed condominiums into single buildings and cross-referencing supplementary data sources from large-scale building portfolio owners.   The tool's MCDM logic captures information on various building aspects, based on tacit and explicit knowledge gained from actors in the DER domain. It is strategically outlined to weigh and score architectural and environmental characteristics as a combined 'deep retrofit index' to indicate DER suitability. These include determinants such as façade and roofing materials, volumetric complexity, building structure and foundation, envelope condition, and site features that may obstruct or facilitate the installation of panelised over-cladding solutions. As we refine the selection criteria for deep retrofit projects, alternative surveys can be developed and swapped in, allowing for multiple passes with new and increasing levels of detail. To speed up data collection, we intend to engage a wider network of BIT users through citizen science.   Future research will incorporate ML to automate the building characterisation process that is currently guided by manual user input. In its current form, the tool stores and links imagery to survey data to form a labelled dataset. We intend to develop a supervised learning model that automatically labels certain building features, leveraging segmentation techniques in ML [5] to break down saved views into architectural components, and subsequently categorize them using vision-based classifiers like HD-CNN [6, 7]. This will accelerate our progress towards collecting bottom-up data to support mass DER deployment.

Integrating Building Technology and Computation into Urban Design: A Contextual Approach

Urvi Varma, University of Illinois- Urbana Champaign
Anushree Parkhi, University of Illinois- Urbana Champaign
Yun Kyu Yi, University of Illinois, Urbana-Champaign

In today's rapidly evolving world, cities experience continuous growth and transformation. Amid this progress, certain areas within cities often remain underdeveloped in comparison to others, leading to disparities and inequities. This project attempts to resolve these issues by utilizing advancement of technology and computation. More specifically, the project adapted data mining and parametric design.   The proposed methodology aims to create context responsive urban aggregations by mapping open-source data such as population, public infrastructure and also subjective data emotional data, such as mostly used keywords on social media of individual expression related to specific location. This ensures a holistic approach tailored to varying needs of different urban areas, thereby avoiding homogenized urban design. The following project discusses a detailed insight into each step of the proposed methodology, using Chicago as a case example. The process initiates with a comprehensive data analysis and mapping of the chosen urban area, follows through a parametric design development and optimization stage.

DESIGN: PARTICIPATORY PROMPTS

Friday, March 15, 2024, 11:00am-12:30pm

Free to All: Outdoor Spaces for the Boston Public Library

Chana Haouzi, University of Chicago
Matthew Okazaki, Tufts University

Free to All is a series of semi-permanent outdoor shade canopies, cooling misters, and seating strategies developed for nine satellite branches of the Boston Public Library. In the summer of 2022, Boston Public Library received a grant to improve access and visibility to library resources in nine underserved communities. The project served as an opportunity to bring the library's services and spaces beyond traditional boundaries to connect with the public in new ways. Beginning with community workshops conducted in partnership with a local social justice organization, the vision, identity, and distinct needs of each branch and community were highlighted. This effort was supported by detailed site surveys, librarian interviews, and existing equipment inventories which built on the unique conditions of each site and previous engagement work. Based on this feedback, a modular kit of parts was designed with components that could be deployed on each site as needed. The system introduced a series of simple and open-ended pieces of furniture that could be assembled and aggregated by the public to serve a variety of functions, from outdoor performance stages to informal gathering spaces. The five furniture types were designed with ease of fabrication in mind using only four cuts. A colorful weather-resistant lumber made from recycled milk crates was chosen for the material. In addition to the furniture, canopies were developed to provide shade, light, and cooling mist. The canopies reimagined the use and function of readymade components including Unistrut, as well as salvaged dimensioned lumber, aimed at affordability, replicability, and responsiveness to community and context. Fabrication and assembly was conducted in partnership with a local non-profit organization aimed at assisting underserved youth with social, vocational, and academic skills to thrive in the design and construction industry through hands-on experience. Throughout design, prototyping, and fabrication, we worked with the organization to support hands-on training and design education. Our partnership was intentional about offering new leadership and training opportunities, empowering the youth through a tangible contribution to the built environment, and constructing identity through the re-imagining of spaces and places within their neighborhoods. With a tight schedule and limited budget, we developed a three-phase solution that continually examined the projects at two scales: individual sites and as a collective entity. Each branch was considered independently to respond to distinct needs and conditions, while simultaneously framing them in a series to ensure the design was responsive to lessons learned, and to maintain legibility across branches. We completed our work with a post-occupancy survey and operational memo to ensure the long-term maintenance and stewardship of the project, which included drawings, design inventory, and detailed instructions for repair or replacement. Ultimately, Free to All serves as a community-driven design model for future public design and construction processes, creating playful, flexible spaces using simple off-the-shelf resources, low-tech construction methods, a modular design approach, and a robust community engagement process in not just the planning and design, but the construction and assembly process as well.

Re-Imagining tea carts in Calicut, India
Naeera Ali, benoy
Anna Lukose, City of Vancouver

Kerala's tea stalls have been an integral part of public life, bringing people from across socioeconomic strata to offer vibrant spaces for refreshment, social interaction, and political activism. In recent years, the carts have been perceived to be unclean and inferior to trendy cafes. With this pilot project, we aim to revitalize this age-old social institution by reimagining tea carts as efficient, hygienic, and functional spaces. The pilot project was approached with a participatory method by having multiple consultations with various Government agencies, stakeholders and other experts in the field, to obtain legal permission and to encourage community participation to incorporate strategies from the public opinion, that could benefit the users. As a first, we took permission from the owners of our targeted stall Mr. Narayanan, Mrs. Narayani, and Mr. Muthu and conducted an interview to understand the depth of specific issues faced by them and take their suggestions into the redesign of the stall.   We then established our case and developed a preliminary report to pitch our idea to various Government authorities who had stake in bringing the project to life. We were actively supported by the Mayor of Calicut, Health officer, Councillor of Karaparamba ward, and Secretary of Town vending committee, Calicut. After presenting our concept and reviewing it by them multiple times, we could successfully implement the project on ground with the help of the vendors. We also had active participation from the youth of the residence community around, to paint the wall graffiti.   The major concepts of the redesigned cart in the pilot project includes, reducing the adjacency to road and shifting the work space to the inside of the cart for the owner's safety, closed storage system for better hygiene and safety, movable and foldable structure for flexibility of space usage, opening on all four sides for sufficient ventilation, roof projection for protection from heat and rain and incorporating solar panels for lighting. Though the primary objective of the project is to re-design tea carts, we envision the surrounding spaces to evolve as a core public spaces which is vibrant, hygienic, safe, and coherent. Through the study conducted, the most prominent issues to be addressed around the carts were safety, waste disposal and parking. Re-imagining the space around the cart by addressing these issues would enhance the realm and add economic and social value to the tea cart and its vicinity. We envision to tap the potential of creating opportunities by rationally designing and activating under-utilised public spaces for a better lifestyle.

The Hip-Hop Xpress: Double Dutch Boom Bus
Kevin Erickson, University of Illinois, Urbana-Champaign

The Hip-Hop Xpress is an internet-connected mobile classroom, recording studio, and performance venue that links communities across our state through a variety of programmed events and outreach initiatives. Inspired by George Washington Carver's Jesup Wagon, Xpress travels to parks, community centers, schools, universities, and parking lots to spark connections among different generations, highlight Black cultural legacies, and invite young people to try new activities, all inspired by Hip Hop and its antecedents.

Our team undertook a multi-year process of engagement with community stakeholders, hosted participatory design events, and toured the emptied bus to test functionality. Three primary needs emerged that shaped the interior configuration: a gathering space for collaboration, a multi-purpose workbench, and seating booths for focused work.

We envisioned the interior as a scaffolding that can evolve over time. Ten furniture pieces were developed with multiple functions: seating, storage, power supply, sound production, lighting, acoustic dampening, transportation safety, and overall durability considerations for a moving vehicle.

The bus is powered by a solar array, providing enough capacity for most interior functions – except subwoofers. The majority of materials were sourced within a 500-miles radius. Items removed during demolition were recycled, reused or will be incorporated into a future design-build project.

Over sixty students – freshman to doctoral – from music, architecture, engineering and business participated in a 3-credit seminar taught by faculty and community leaders. Our goal, bring a diverse group of individuals together, discuss hip-hop from different perspectives, and create a mobile laboratory. Youth from the Boys & Girls Club and other constituencies attended our weekly course in what we term as 'communiversity'.

University students lead every aspect from: community engagement, design, materials research, procurement, fabrication, assembly, installation, trades coordination, fixtures & finishes, budget, and client transition. They were evaluated based on effort and achievement.

Building Better Water Systems
Kulsum Fatima, University of Calgary

In view of the increased concerns about United Nations Sustainable Development Goals (UNSDG), there is the need to minimize water related challenges and maximize water security and availability through sustainable green building practices. This presentation "building better" explores the influence of green building practices on water management by comparing objectives, directives, and applications suggested by the LEED certification system and the Living Building Challenge (LBC) certification system. It aims to understand the advantages and challenges involved in transitioning from LEED guided water-efficient operations to LBC compliant net-zero water operations. This presentation evaluates best practices from three design precedent sites: CIRS at the University of British Columbia, Bullitt Center with the University of Washington, and Kendeda Building at Georgia Tech University. For this purpose, two evaluation frameworks are used Performance Assessment Framework (PAF) and Water Literacy Assessment Framework (WLF). UCalgary and design precedent sites are evaluated using the PAF and WLF frameworks, to identify challenges and barriers to water performance efficiency and improve water management practices. This research hope to encourage decision makers and practitioners at HEI to achieve net-zero compliance as per LBC, minimize performance gaps and water-related challenges, motivate water managers to develop an operational net-zero water scenario, and incentivize water users to support this scenario by promoting good water use behaviours on HEI campuses.

SOCIETY + COMMUNITY: EDUCATION AND COMMUNITY DESIGN
Friday, March 15, 2024, 11:00am-12:30pm

A Replicable Model for Educating Community Architects

Mart Deceuninck, KU Leuven
Emilie Taylor, Tulane University

Contemporary community architecture and disaster resilience scholarship have shed light on the work of community architects, highlighting the features, merits and limitations of this practice in building community/disaster resilience through participatory design processes. However, a knowledge gap not yet bridged is how these community architects are academically trained to practice community-oriented work and how Schools of Architecture - through such training - catalyze community development in the cities in which they are located. In the current era of climate change and given the disastrous consequences of unequal post-disaster recovery and redevelopment processes, it is critical to have community architects who are able to cope with this new reality. Therefore, it is important to gain knowledge on how to train community architects and in this way contribute to the formation of the future generation of architecture students into socially conscious community architects who promote a more socially just built environment.   The aim of this paper is to outline a pedagogical model for educating community architects based on an analysis of a case study in the USA, a place where much of this pedagogy is being developed, namely the (redacted) center. The (redacted) center functions as the community design center of the (redacted) School of Architecture. The paper illustrates and reviews this pedagogical model through an analysis of a design/build studio at the (name redacted) that took place during the fall semester of 2021-2022. In this 14-week studio, students were challenged to design and build a 960 square foot outdoor teaching kitchen and water management strategy for a local farm to accommodate expanded educational events on site. The design team worked with the staff and stakeholders of the partnering farm on a project that connects people of all ages to their food systems and local ecologies at multiple scales within the completed project.   During one-month ethnographic research with the (redacted) center, empirical data was harvested through review of project materials, semi-structured interviews with students, alumni and teachers and site visits to the farm. The paper shows how live community-based project pedagogy helps students take on some of the various multi-faceted roles of a community architect and effectively learn by doing. Students gain insight into the impact of community engagement and the challenges involved, such as a limited budget, communication within the project team and collaborating with non-designers. This research offers deeper insight into the pedagogical approach, teaching methods and the projects of community architecture programs in the USA. The paper outlines key takeaways and critical reflections from the ethnographic research and case study analysis that are relevant to Departments/Schools of Architecture across the Globe as they prepare the next generation of architects.

If:Then, Assessing the Impacts of 20 Years of a University-Based Community Design Center

Ann Yoachim, Tulane University
Maggie Hansen, University of Texas at Austin
Emilie Taylor, Tulane University
Nick Jenisch, Tulane University
Jose Cotto, Tulane University

University based community design centers have been a part of architectural education since the 1960's yet their existence is volatile over time as federal funding cycles and social movements for equity and justice rise and dissipate. Within this fluid context a longitudinal study of Public Interest Design pedagogy and community impacts of the work is difficult. Public interest design serves different clients and works toward outcomes beyond formal or material innovations, and yet success is still measured through images of physical forms and statements of concept1. This research asks the question, what can new project evaluation frameworks that consider the many impacts and outcomes of collaborative design processes teach us?   Based on grounded research theory, we used qualitative in-person and online interviews and site visits for 50 projects across the Center's history and all five categories of its work to gain an understanding of the Center's impacts . The study reveals a different view of success and failure for projects aimed at supporting partner organizations' missions.The results highlight the strengths and limitations of academic community engaged design practice in addressing historical inequities in design and architecture, the challenges of bridging campus-community dynamics, and in changing public understanding of design more broadly.   Commitment to engaged evaluation is co-equal to that of engaged design processes. The Center's impact on individual partners and the city and region can only be understood through ongoing evaluation. Strengths including the ability to serve as a connector and facilitator, and challenges such as long-term commitment to partners due to variable funding for staff capacity require embedded systems for regular evaluation beyond design quality. This research synthesizes both tangible and intangible additional qualities and/or services associated with the collaborative design process that are more determinative of a project's success or sustainability.

Serious Play: Reimagining Children's Playscapes, From Speculation to Fabrication

Joseph Altshuler, University of Illinois, Urbana-Champaign

Serious Play is a new graduate design program and community-engaged fabrication curriculum for the University of Illinois at Urbana-Champaign's semester-long residency program in Chicago. The program includes an Advanced Design Research Studio and a Fabrication Seminar that collectively explore contemporary playscapes—spaces where play and learning converge, and where architecture becomes an active character that sparks curiosity and care, nurtures physical and emotional risk, and strengthens multi-generational relationships. As an institutional lens aligned with this agenda, the program re-imagines the future of children's museums. While conventional children's museums typically operate as a container for discrete exhibits designed by others, this curriculum challenges students to transform children museum's architecture into a dynamic and interactive installation of its own, where the normative dichotomy between architecture as container versus architecture as content is strategically dismantled.

The program brought together architecture and landscape architecture students, setting up interdisciplinary teams where playscapes seamlessly mediate between building- and landscape-oriented strategies engaged with specific Chicago neighborhoods. With an emphatic effort to empower the students to work closely with real-world community partners, stakeholders, and collaborators and to take advantage of the fact that students from Urbana-Champaign were spending a semester "abroad" in Chicago, Altshuler initiated creative working partnerships with cultural institutions (the Chicago Children's Museum and Design Museum of Chicago), local fabricators (Building Brown Workshop), and a K-8 public school community (KIPP One Primary).

Outcomes of this creative achievement include:

award-winning student design proposals for speculative children's museums (recognized by multiple departments at University of Illinois and the AIA Chicago),

a well-attended exhibition at the Design Museum of Chicago that broadcast research on the future of playscapes to broad audiences, and

a fabricated permanent play structure installed in a local elementary school informed by a participatory process that engaged the school's 4th students.

Bears Ears Education Center Outdoor Classroom
Elpitha Tsoutsounakis, University of Utah

The Field Studio is a platform for collaborative practice engaging faculty, students, organizational partners and the broader community. The studio focuses on so-called Public Lands and the rural towns in close proximity. In this featured project, the studio worked with Bears Ears Partnership to design and build components for the Outdoor Classroom at the Bears Ears Educational Center in Bluff, Utah. We worked with partners in the community, local NGO's and Federal and Tribal governing bodies of the Bears Ears National Monument. The project includes educational exhibits, furnishings, and interactive activities for local k-12 children and visitors to the BEEC.

Students are introduced to collaborative design methods and reflect on relational and reciprocal ways of engaging people and place. They develop design interventions in response to community partner prompts filling needs in research and design for our collaborators. The concepts designed in the studio are then further developed outside of the classroom with paid research assistants and partner staff. Students and faculty collaborate with a variety of trades and fabricators while also completing part of the construction in-house.

The collaboration also allows us to bridge complex relationships between government and NGO partners working together to manage public lands. Student projects in community spaces become prototypes for implementation in the Monument. This transformative educational experience gives students the opportunity to engage in community needs and shape their work in service to issues beyond the commercial market, while also seeing the complex process of implementing a project in the built environment. They are particularly proud of contributing to the community and seeing their designs executed in "real life".

Design, Policy and the Human Experience: Historic Development and Current Typology of Community Spaces in Detroit
Ceara O'Leary, University of Oregon

In the city of Detroit, policy interventions, public life and urban design are intertwined. Civic spaces that are unique to the Detroit landscape have evolved overtime in response to political momentum (or lack thereof) and design directions, informing and informed by community leadership and human use. This paper will track the evolution of three central types of urban spaces in Detroit, documenting the morphology alongside contemporaneous social, economic and cultural contexts that intersect with urban space. This research and documentation seeks to link the braided narratives of design, policy and community experience in the historical development of three spatial typologies – commercial corridors and streetscapes, the vacant lot as neighborhood landscape, and the changing site of the community center from civic structure to repurposed residential space – all of which are central to urban form and public life in the city. This work is couched in a larger narrative of urban development and design in an industrial legacy city, including histories of racist policy, deep disinvestment and outmigration that have had a profound impact on spatial experience of residents in the city. This past has also informed the role of design in the formulation of iterative public spaces. Research methods include: archival research of news clippings, city policy, urban photography, and drawings; graphic documentation and analysis of typological change over time; and testimony from community leaders and designers. The paper seeks to overlay political and social trajectories with design evolution of urban spaces and their role in community life and thus account for the complexities the built environment unique to Detroit overtime. The resulting documentation will tell the story of changing urban spaces in a political and social context and in relationship with public life in the city of Detroit.

ECOLOGY:REUSE ECOLOGY
Friday, March 15, 2024, 11:00am-12:30pm

Quantifying the environmental benefit of adaptive reuse: a case study in Poland

Ming Hu, University of Maryland
Jakub Świerzawski, Academy of Silesia
Justyna Kleszcz, Opole University of Technology
Piotr Kmiecik, the Angelus Silesius University of Applied Sciences in Wałbrzych

Adaptive reuse is the process of renovating old buildings for new use. It is often seen as a more sustainable option than demolition and new construction, as it can help to reduce waste and conserve resources. However, there has been limited research on the environmental benefits of adaptive reuse from a life cycle perspective. This study aims to provide empirical evidence of the environmental benefits of adaptive reuse by conducting a life cycle analysis (LCA) of a three-story historical building in Zabrze, Poland. The LCA compared the environmental impacts of the historical building to those of a proposed adaptive reuse project. Five impact categories were assessed: global warming potential, ozone depletion potential, acidification potential, eutrophication potential, and smog formation potential. The results showed that adaptive reuse was effective in avoiding environmental impacts across most impact categories. Global warming potential demonstrated the highest avoided impact (82%), followed by smog formation potential (51%), acidification potential (27%), and eutrophication potential (21%). These findings provide quantifiable evidence of the environmental benefits of adaptive reuse and emphasize focusing on the adoption of adaptive reuse as an effective way to reduce carbon emissions and mitigate environmental impacts from the built environment.

The Complex Landscape of Wind Energy Waste
Dragana Zoric, Pratt Institute

Wind energy has been growing at a record pace, fueled by the pressing mandate to decarbonize economies in order to mitigate the climate emergency. Cumulative wind capacity has increased 12% annually in the U.S. and 15% globally. [1] The U.S. currently obtains 10.2% of its utility-scale electricity generation from wind;[2] this number is anticipated to be 18% in 2050[3],   As the costs of the infrastructure and its energy produced have both fallen significantly over the past two decades, the number of installations and the efficiency of their operation have surged. Increased production and greater capacity have also caused wind turbine designs to dramatically increase in size. All of these directly affect both their environmental performance and environmental impact. Environmentally, wind energy is often called one of the most environmentally promising and economically viable sources of renewable energy.[4] It is advertised as being carbon neutral or able to provide clean energy without any emissions during operation[5]. Although wind energy has numerous benefits in comparison to burning fossil fuels, the environmental concern of its materials reuse (or disposal) persists. The blades, key components in wind turbines, made of composite materials, are currently extremely difficult to nearly impossible to recycle. The same holds for rare earth elements (REE), crucial raw materials for the manufacturing of permanent magnets used in turbine generators. There is currently no effective scalable method for the collection and separation of rare earth element-containing products.[6] Fiberglass blades have an average lifecycle of 20-25 years after which they must be replaced. Wind turbine blades are usually replaced in kind, swapped for longer blades or installed on new larger turbines when wind farms are upgraded. [7] Research indicates that there will be 43 million tons of blade waste worldwide by 2050 with China holding 40% of the waste, Europe 25%, the United States 16% and the rest of the world 19%.[8] The amount of blade material that will need to be recycled annually is 400,000 tons between 2029 and 2033. It will increase to 800,000 tons per year by 2050.[9] Currently, decommissioned wind turbine blades have no commercial value. Because there are so few options for recycling the blades currently, the vast majority of the blades that reach end-of-use are either being stored in various places or taken to landfills. As a result, old blades, measuring an average of 170 feet, the longest being 350 feet, are impossible to transport and are commonly cut into several pieces onsite, a process requiring large equipment such as a vehicle mounted diamond-encrusted industrial saw, similar to what is used in quarries, a process emitting a great deal of carbon-dioxide on its own.[11] This paper describes the problematic nature of blade and REE reuse and recycling, examining the impacts and potentials of their associated wastelands, including the lack of information surrounding them. The paper further outlines a comprehensive range of solutions, from governmental policy revisions, chemical restructuring of the material, to its future reinvention as a structural material in architecture and civil engineering.

CanoPIT: Valorizing Food Waste into Printable Biomaterials for Participatory Learning

Yuanyi Cen, University of Pennsylvania
Ji Yoon Bae, University of Pennsylvania
Laia Mogas-Soldevila, University of Pennsylvania
Andreina Sojo, University of Pennsylvania
Abigail Weinstein, University of Pennsylvania

AIM: Inspired by problematic organic waste streams in the metropolis and by the outstanding capacities of natural materials [1], we propose a methodology to transform unavoidable food waste from stone fruits into bio-based printable blends, outputting strong, healthy, and biodegradable functional large-scale surfaces with applications in the built environment (Figure 1).   PRECEDENT: In the City of Philadelphia, 17% of the trash that ends up in landfills is wasted food from households and commercial properties such as restaurants and grocery stores [2]. Since there is no centralized composting system in the City, all of the food waste collected by the municipality goes to landfills or incinerators, generating excess methane, toxic volatiles, and carbon dioxide that harms the environment, and human and wildlife health [3]. Stones in fruits like avocado, peach, cherry, and mango are not fit for consumption and generate unavoidable waste but have the potential to be transformed into functional products. Waste avocado pits have been used to produce food supplements [4], bioplastic utensils [5], moldable pastes [6], and their anthocyanins have been extracted to make natural dyes [7]. Interestingly, avocado pits make up 20% of the avocado mass and are made of carbohydrates and lignin [8] presenting the potential to be explored as structural aggregates or functional fillers in bio-based construction and product design.   METHOD: Building on our previous work on biomaterial-based surfaces fabrication [9], we devise a multi-material functionally-graded system, using triple-layer additive manufacturing of dehydrated and ground avocado pits combined with natural thickeners, plasticizers, and binders derived from fishing, forestry, and agricultural by-products [9] such as; sodium alginate from undesired algae blooms, chitosan from shrimp shell waste, glycerol from vegetable oil production, and lignin from yard trimmings and logging (Figure 2). The method achieves chemically-bound multiple-layer composite surfaces with tunable shaping, aroma, flexibility, strength, and degradation promoting a healthier built environment (Figure 3). Specifically, we (i) fine-tune degradation by adding antimicrobial binders like chitosan, (ii) improve tensile strength by chemically optimizing material contribution in blend recipes and by geometrically reinforcing structures with lignin, and (iii) we increase water-resistance properties with a catalog of bio-based coatings such as waxes and oils.   APPLICATION: We design a large outdoor structure diverting biomaterial waste from landfills that serves as a functional demonstrator of organic waste materials structural capacities and improved life-cycle, as well as an educational beacon for the local community in South Philadelphia. We design a temporary undulating canopy structure to be used in seasonal markets and festivals with shapes informed by geometric tool pathing and distributed material properties based on the varied behavior of our fruit waste blends (Figure 4). The temporary gathering structure serves three objectives; it provides (i) shading and reunion space for targeted learning about the existing food waste issues in Philadelphia, (ii) hosts participatory workshops on food waste-based materials fabrication, and (iii) demonstrates their potential to become building systems for a healthier tomorrow.

Re-Usable Design: A Public Interest Design Build in a Historic Texas Freedman's Town

Julia Lindgren, University of Texas at Arlington

In today's construction industry the dominant model for resource consumption is linear, beginning with natural resource extraction and ending with the landfilling or combustion of building materials[i]. According to an Environmental Protection Agency 2020 report, this model generates 600 million tons of construction and demolition debris in the United States annually - more than twice the amount generated by municipal solid waste[ii]. Of this total, 25% is delivered to landfills, 75% is recycled, and less than 1% is reused when calculating debris by weight.[iii]Current trends prioritize commodity recycling requiring resource intensive processes to repurpose materials versus a circular system that takes advantage of a materials' inherent ability to be reused. Redirecting these building materials back into our communities could reduce global CO_2 emissions 38% by 2050[iv]. Municipalities are recognizing the environmental, economic, and social benfits of circularity and are beginning to implement policy initiatives to incentivize waste diversion[v]. University architecture design build pedagogy, rooted in community engagement, offers an opportunity to challenge the typical design and construction process by employing, documenting, and analyzing a circular material approach to small scale community projects. This case study explores the benefits of deconstruction and reuse processes in the design, planning, and making of a 1,300sf outdoor classroom in partnership with the non-profit organization, Joppy Momma's Farm. Located in one of North Texas' most intact Freedman's communities founded in 1872, Joppy Momma's mission is to disrupt the systemic social, physical, health, and economic challenges facing its community by empowering, educating, and creating greater opportunities for individuals and families through regenerative agriculture[vi]. This project employs two primary strategies for practicing radical material responsibility: (1) designing to incorporate harvested and reused building materials in the outdoor classroom and (2) designing for the future deconstruction and salvaging of the outdoor classroom materials for new purposes. These strategies are implemented in conjunction with larger project objectives to celebrate local history, foster community connections, and build organizational capacity. Implemented design tactics are thus multi-faceted and include the deconstruction and reuse of siding from local residential demolition for use as shade screening and the reuse of shipping containers from the adjacent rail yard as a farm office and produce stand. Design and construction processes include developing a disassembly plan, building with simple open-span structural materials, using easy to access mechanical fasteners for connections, utilizing single-stage processed materials that do not contain sealants, adhesives, etc. and planning for future dismantlement, among other things. Presented research will discuss the process benefits as it relates to project costs, lifecycle embodied energy, neighborhood stewardship in respect to local history and memory, and educational objectives as well as challenges including instability in planning for reuse supply, time and labor necessary for deconstruction, and incentives to encourage future building material reuse. Lessons learned from Joppy Momma's Farm's outdoor classroom suggest that small incremental changes within design and build processes can result in considerable environmental, economic, and social benefits for local communities, municipalities, and the larger public.

PEDAGOGY: DESIGN AS RESEARCH
Friday, March 15, 2024, 2:30pm-04:00pm

Teaching Timber Across the Curriculum: A Two-Studio Sequence on Mass Timber

Michael Harpster, University of Nebraska-Lincoln
Sarah Thomas Karle, University of Nebraska-Lincoln

As the discipline continues to assign greater levels of attention to the investigation of mass timber structural systems, it is important for educators to provide a holistic framework through which students are able to develop a critical understanding of mass timber that extends beyond its basic formal and structural possibilities. As Lindsey Wikstrom notes in her recently published work, "Mass timber challenges us to rethink many aspects of the modern world, far beyond the materiality of buildings." Understood within a broader cultural, economic, and ecological network, the analysis of mass timber can help to expand student understanding of the contingencies, complexities, and current challenges facing the architectural profession.   The purpose of this paper is to outline how a two-semester sequence of design studios extended student understanding of mass timber beyond the basic materiality of buildings and introduced students to broader considerations of the material's extraction, production, transportation, installation, and cultural reception within the built environment. Through two successive undergraduate design studios, students were given the opportunity to explore the technical as well as the ecological, cultural, and aesthetic possibilities of mass timber structural elements. With each semester providing unique geographic and programmatic contexts for student investigation, the two-studio sequence allowed students to gain a diverse understanding of the constraints and possibilities of mass timber structural systems. During the first semester, interdisciplinary teams consisting of architecture, landscape architecture, and interior design students utilized mass timber in the design of a visitor center and outdoor interpretive pavilion for a state park site. Given the site's rural location, students focused on questions of fabrication, transportation, and erection of their proposed mass timber structural systems. In addition to these logistical questions, students also considered how mass timber might reframe the aesthetics of state park buildings and illustrate a shift from a "log cabin" aesthetic containing connotations of individualism and colonization to one that, instead, foregrounds forest management, ecological responsibility, and alternative conceptions of the "natural" within the age of the Anthropocene.   During the second semester, students explored mass timber applications within low-rise infill housing projects. Students collaborated directly with structural engineers and mass timber fabricators and installers to gain a fuller understanding of the technical performances of a range of different types of mass timber structural systems within their respective projects, including one-way post and beam systems, two-way post and plate systems, and full CLT bearing wall systems. In addition to structural performance, students also considered mass timber's aesthetic performance as a material within the interior of the dwelling units and examined the benefits of hybrid structural systems to address issues of acoustical performance and mechanical systems integration.   Ultimately, the courses served as a platform for students to conceptualize mass timber within a broader planetary narrative in which its structural and tectonic performances were considered alongside the material's ecological, cultural, economic, and aesthetic performances. Together, the expanded scope and recursive nature of the studio sequence allowed students to develop disciplinary knowledge and professional agency extending far beyond the limits of the building site.

Integrating Research Impact into Architectural Education

Traci Rider, North Carolina State University
Ming Hu, University of Notre Dame
Xiao Hu, University of Idaho
Jeannine Vail, University of North Texas
Rosa McDonald, North Carolina State University
Soo Jeong Jo, Louisiana State University
Burcu Salgın, Texas A&M University

Understanding research impacts within the architectural discipline is critical for architectural education. Students must develop a comprehensive understanding of the interdependent relationship between research and design, and gain the skills necessary to link the two. For decades, various studies have addressed the interplay and interdependence between research and design, discussing approaches to improve these linkages in architectural pedagogy. The quality and effectiveness of teaching directly influence the potential for research impact; likewise, impactful research findings can enhance teaching methodologies and student learning experiences. This white paper is the result of a workshop conducted during the 2023 Architectural Research Centers Consortium annual conference (Dallas, Texas), focusing on the impact of architectural research. This paper begins to outline a series of impacts to be considered by educators around architectural research with an aim to broaden and organize the idea of research impact. Ultimately, this white paper begins to outline and scope the idea of research impacts for further discussion and clarification within the field. Opportunities for research impact in architectural pedagogy are broad, with a number of examples already in place highlighting rigorous research methods and interdisciplinary collaboration. With case studies of class projects focusing on the generation of generalizable and transferable knowledge, the authors provide examples of research methods in architectural curricula, the impact on students, and the transferability of research skills to practice. To frame research impacts in practice for integration into curricula, such as courses around professional practice, several different models from research in practice will be shared, such as the firm-wide fully integrated model, project-based partially integrated model, and individual-driven standalone model. Understanding architectural research in terms of funding agencies is also important. For example, the NSF is interested in how research strengthens the relationship between the science community and society, or how it translates beyond the boundaries of the profession, team, or specific project. These research impacts can be explored through larger, interdisciplinary lenses that address collaborations, communities of practice, team diversity, and community engagement. Examples will be shared to illustrate ranges of research impact across projects of different scales. Architecture clearly impacts the communities in which we work, though understanding the impact of architectural research around, within, and for these communities is less understood. Dissemination of research findings to communities that we serve in architecture is often rare, and the value of this sharing is unclear for both the researchers and the communities. The authors share examples of community-based research that informs the design process, and how findings have been shared back to the community, both in academia and practice. By identifying the areas of pedagogy, funding agencies, and communities, this outline begins to scope the notion of research impact within architecture to better articulate ideas around how to operationalize and engage research in architectural education.

Constructing Commonality: Autoethnography in Architectural Pedagogy and Practice

Jenny French, Harvard University
Anda French, Princeton University

Autoethnography challenges positivistic research methodologies and assumptions of researcher neutrality. It embraces uncertainty, messiness, and emotion, and has the potential to acknowledge the interconnectedness of architecture with social, economic, and political realities. Drawing from Elizabeth Ettorre's Autoethnography as Feminist Practice: Sensitizing the Feminist "I", this paper suggests that through autoethnographic processes, architects can resist the urge to quantify and categorize, and instead embrace the narrative-building potential of personal revelations and vulnerability. The paper acknowledges the safety and familiarity that static roles provide but argues that these roles hinder progress. It emphasizes the importance of dismantling the myth of the singular genius and instead advocates for an understanding of architecture as a collaborative endeavor. By being reflexive about their shifting status and relational positions, architects and architectural educators can create space for diverse voices and expertise to contribute to the design and production process. Drawing on examples from contemporary architectural practices, and adjacent fields, such as product design and cultural geography, the paper demonstrates the potential power of autoethnography. It emphasizes the importance of situated perspectives, connecting personal experiences to larger social contexts. Prompted by Etorre, by occupying the space of the "in-between" and acknowledging the "personal is political," architects can foster connection, empathy, and collective meaning-making. Autoethnography serves as a device for architects to occupy the space of an "inside-outsider," enabling the exploration of alternative practice and pedagogical models. By engaging in self-reflection, architects can cultivate mutual empathy and construct shared narratives, ultimately redefining the role of the architect in collaborative processes, unlocking new possibilities for collaboration, and transforming the understanding of authorship.

Teaching Award
Lindsey Krug, University of Wisconsin-Milwaukee

Lindsey Krug (she/hers) is a designer and researcher based between Chicago and Milwaukee, and an Assistant Professor of Architecture at the University of Wisconsin-Milwaukee School of Architecture and Urban Planning (SARUP). She holds a Bachelor of Arts from the University of Pennsylvania and a Master of Architecture from the Harvard University Graduate School of Design.

Through the lens of the architectural user as a body in space, Krug studies how design solidifies and reinforces taboos, hierarchies, and inequities into built form, and positions architecture as a biopsying tool that unveils tensions between spatial foibles and cultural conventions of identity, politics, class, and sociality. Krug's research interests are organized around relationships between people and contemporary institutions born of American democracy and capitalism and their corresponding architectural manifestations and myths. Two such institutions of focus are the U.S. Supreme Court and the topic of privacy as it's defined legally and architecturally, and Dollar General Corporation with its small-box retail empire. These research threads are reflected in the courses Krug teaches as her design briefs and syllabi help students confront contemporary issues and current events as part of their design education in order to facilitate students imagining radical and optimistic architectural futures.

Krug's design research titled "Corpus Comunis: Precedent, Privacy, and the United States Supreme Court, in Seven Architectural Case Studies" was awarded the 2023 Best Peer-Reviewed Research Project by the ACSA College of Distinguished Professors. Along with her frequent collaborator Sarah Aziz, Krug received the 2022 Course Development Prize in Architecture, Climate Change, and Society from the ACSA and the Columbia University Temple Hoyne Buell Center for the Study of American Architecture. Most recently, the pair was awarded the 2023 Architectural League Prize for Young Architects + Designers by the Architectural League of New York.

DIGITAL TECHNOLOGY: PEDAGOGY AND PROCESS

Friday, March 15, 2024, 2:30pm-04:00pm

Exo-Skeleton: A Micro Design-Build

Gregory Spaw, American University of Sharjah
Lee Su Huang, University of Florida
Ahmed Ammar, American University of Sharjah

This project showcases a novel methodology of multiplanar robotic tube bending, exploring further development possibilities and utilization in an undergraduate elective seminar, which arguably served as a micro design-build (Figure 1). As the challenges of contemporary practice grow to include the integration of digital technology and fabrication methods, the ability to synthesize these tools into a productive creative process is a growing pedagogical concern. Tricia Stuth outlines this in her writing on embedded knowledge, Second Nature: "Designbuild impels students to synthesize design and technology and begin to embed skills and knowledge that ultimately give rise to intuitive understanding of technical concepts." (175) (Stuth 2017) The installation presented in this project employs workflows developed by two of the authors in previous research that enable multi-planar robotic bending of metal tubes with high accuracy and repeatability (Anonymous 2022). This allows for the rapid full-scale fabrication and assembly of complex spatial tubular configurations comprised of unique modules without the need for elaborate jigs or falsework support. Additionally, the speed of the robotic fabrication method allows for meaningful iteration and tactile physical feedback during the students' design explorations. Introduced within the context of a three credit hour Advanced Digital Fabrication elective, the students were tasked with designing and building an installation with the aim of utilizing the previously mentioned workflow and leveraging its unique characteristics. There was an intentional emphasis on smaller, faster builds with the final results being far from preordained, an approach that grew from instructional experience in a previous design-build option studio (Anonymous 2021). Throughout the process, the primary design outcomes were student-driven, with minimal input from the instructor. This was an intentional decision taken to shift the onus of the project's completion and success, and ultimately ownership, to the collective initiative of the student team. The instructor's role here was primarily to facilitate the usage of the tools and workflow, aid with troubleshooting, and coax the collective decision-making process forward with organizational and procedural suggestions. The course structure allowed the students to take initiative in the pursuit of an iterative design approach while gaining insight into a unique, ongoing digital fabrication research trajectory in a focused, micro design-build experience, and integrate that knowledge into their own collective creative construct.

Artificial Intelligence Literacy: Collaborating to Support Image Research in Architecture Education

Cathryn Copper, University of Toronto
Paul Howard Harrison, University of Toronto,
Zhenxiao Yang, University of Toronto

This paper explores a collaborative approach to integrating artificial intelligence (AI) literacy into the architecture curriculum, with a particular focus on the role of architecture libraries and librarians in supporting this technology during the concept phase of design research. It outlines a student assignment to use text-to-image AI generators to recreate architectural images. A comprehensive online guide supports the student's investigation of AI ethics, concept creation, prompt engineering, and evaluation. Feedback from the assignment indicates increased confidence in using AI image generators and enhanced critical thinking abilities. The paper advocates for AI's role as a co-creator in architecture, emphasizing the importance of incorporating critical thinking in architecture courses, and underscores the value of collaboration between faculty and librarians in AI integration.

Diversifying the Curriculum: Use of Artificial Intelligence in Architectural Education

Nesrine Mansour, South Dakota State University

The influence of artificial intelligence (AI) across various domains has exerted profound effects on human lifestyles, professional practices, and educational frameworks. This proposal delves into the realm of architectural education to investigate the process of diversifying the curriculum by incorporating AI methodologies. To achieve this, the study draws upon case studies from an Architecture studio. The objective is to comprehend the potential advantages, challenges, and ramifications associated with the integration of AI technologies in architectural learning environments. Traditionally, architecture education has focused on design principles, technical skills, and historical context. Nevertheless, the integration of AI technologies presents an opportunity to broaden the pedagogical scope by exposing students to emerging concepts and techniques. The Sacred in Between: Architectural Explorations of Sacred Spaces is a Design/Research studio taught during Fall 2022 that facilitates students' exploration of the notion of "the sacred" through the production of digital and physical artifacts that delve into the intricacies of sacred spaces and their connection to diverse spiritual practices. Students engage in research, comprehension, modeling, and imaginative exercises to explore the sacred within our contemporary world, employing AI as a novel tool. Utilizing Midjourney AI, students craft their own interpretation and synthesis of relevant readings and class discussions as prompts for the creation of imagined scenes. An extensive array of images servie as sketching tools during the initial phase of the design process. Additionally, students are prompted to reflect on their encounters with AI addressing the question "To what extent can Artificial Intelligence influence architectural education and the profession?" The inquiry forms the basis for an organized class debate, wherein students argue for or against the impact of AI on architectural education. The discussion centers around the implementation of AI in architectural education and its challenges. One salient concern pertains to the potential decrease of human agency and creative input within the design process. Students posit that an excessive reliance on AI may engender a standardized approach, thereby stifling individual expression and innovation. Consequently, it becomes imperative to balance between utilizing AI as an exploratory tool and nurturing students' innate design intuition. The ethical dimension arises as a paramount consideration when integrating AI into the curriculum. Deliberations surrounding authorship, algorithmic bias, and the impact of automation on the labor market must be integral components of the educational framework. Students advocate for the development of a critical understanding of the social and ethical implications associated with AI technologies in architecture. The integration of AI in architecture education holds potential for curriculum diversification, design exploration, and interdisciplinary collaboration. In our technophilic society, particularly amidst the Covid-19 pandemic, digital technologies, have gained significance, propelling us towards the Metaverse. However, preserving human agency, addressing ethical concerns, and preparing students for a dynamic professional landscape are crucial. Embracing AI as an educational tool equips architecture institutions to empower students in confronting complex design challenges amidst rapid change. Consequently, architects and designers must consider the extent to which architecture manifests in digital environments, as the discourse on their role intensifies in this realm.

Artificial Connections: Finding the Architect's Role in Text-to-Image Tectonics
Nick Safley, Kent State University

Architects employ images to convey construction information, embedding material knowledge to translate concepts into tangible structures. The rise of artificial intelligence (AI), particularly text-to-image platforms, challenges traditional roles by swiftly generating high-resolution yet uninformed and undisciplined images. This research delves into executing material connections depicted by undisciplined AI images, exploring how perceived errors in material connections can push architectural boundaries. A graduate seminar utilized Midjourney, a text-to-image AI, to create images of material connections. Three student groups translated AI-generated material joints into mockups, navigating the challenges of incongruent AI images with material and fabrication realities. The process involved diverse approaches, from drawing inspiration from AI to replicating AI images faithfully. The seminar reconnects with tectonic thinking, linking AI image generation with material construction and envisioning a future where architects navigate the limitless possibilities of undisciplined tectonics.

DESIGN: WHAT'S MATERIAL GOT TO DO WITH IT

Friday, March 15, 2024, 2:30pm-04:00pm

The Mizer's Ruin

Jason Griffiths, University of Nebraska-Lincoln

The Mizer's Ruin is a 190 sq ft micro-dwelling that develops a low-carbon fabrication system through local forestry production. The project is based on harvesting, milling, fabricating and constructing processes, where over ninety percent of materials come from within a mile of the site. Of these materials a large majority are eastern red cedar (Juniperus Virginiana) which is conventionally regarded as unproductive lumber, incorrectly described as "invasive" and often destroyed and discarded to improve farmland. We worked with state forestry agencies to develop a new forestry management plan that generated a new timber resource that mitigated the growing threat of wildfires from fuel build up. This resource provided constraints for student research that included field studies for material flows, round wood selection, in-situ milling (Wood Mizer), atypical dimensional lumber, charring techniques, and an analysis of "whole tree" usage. Our team applied this research to establish several dry assembly mass timber construction techniques that included the mechanically fastened wall, lap joined timber deck, and solid wood floors. While most building elements remained on site, the project also allowed for off-site research and fabrication of vacuum-bonded, cross laminated components that include exterior doors and built in furniture. Students were also engaged in on-the-fly documentation to include effort reporting, energy consumption and travel that was used in a comparative study of embodied energy consumption. The duration of this project from inception to completion lasted over 5 years and helped to reaffirm (during and post covid) important curricular structures for design-build pedagogy. The project was conducted through cohorts of graduate level students', as well as undergraduate architecture students at third year level and landscape and interior design students in a collaborative 4th year studio. At all levels, students engaged directly with professional consultants, forestry specialists, academics, and project user groups.

Designing and Building with Plastic Waste
Jason Scroggin, University of Kentucky

The Big Blue Bench (figure 1) is a public art installation that serves as prototype to demonstrate the reuse of plastic waste as building material. The product is the result of research funded by a sustainability grant to generate new uses for the abundance of plastic waste produced by the university healthcare facilities.   This Big Blue Bench prototype serves as a proof of concept to demonstrate a small-scale process and philosophy of designing and building with waste. This process could be applied to multiple materials and scales of building. The design proposal was developed over the course of the semester in a design build elective that explores the use of the systematic processes of digital design and fabrication directed towards the development of large-scale interactive objects or a "micro-architecture." The constructed objects consider the relationship to human scale and proportion, materiality, and method of fabrication and assembly. The project evolves through research, discussion, and fabrication over the course of 14 weeks.   For this semester, the class was charged with developing concepts for use and new implementation of plastic waste generated by the healthcare facilities on campus. The students began with a tour of the recycling facilities to understand the amount of waste produced and discover potential materials for use in their proposals. After experimenting with multiple materials, they selected a plastic wrap used to keep equipment sterile before its use and that is produced in box loads daily, a near limitless supply (figure 2, top row). The process they developed used 100% of the waste acquired for experimentation where it is shredded and melted down into a standard 8.5"x11" blank (figure 2, bottom row). These blanks could then be milled in custom shapes to fit the final proposal, the Big Blue Bench (figure 3). The Big Blue Bench is a large-scale furniture piece that is both an art piece showcasing the reuse of the material on its outer surfaces, and a functional bench and table for students to use daily for their off time between classes. It will showcase 106 custom cut tiles produced from the CNC milled blanks. These tiles will be usable surface applied to the top layer of horizontally laminates sheets of plywood stack of horizontally cut into undulating shapes to allow multiple surfaces for sitting and holding a variety of scale of items from laptops to coffee cups (figures 4 and 5). The project is also on track to use 100% of the material needed to produce the final form as the scrap from the milled blanks can be melted back into new tiles and untreated plywood scrap from the cutsheets was picked up by the university recycling center to shred into mulch.

Incremental House
Jeremy Ficca, Carnegie Mellon University

This paper outlines ongoing research into the performance and viability of hemp-based material systems as a primary method of exterior wall construction. It reveals the robust performance of hempcrete through material tests and a spatial application through the design for an incrementally constructed house. According to the United Nations Environment and International Energy Agency study on accompanying energy consumption, 39% of total global carbon emissions are linked to building construction. While approximately 72% of this segment occurs over the course of a building's operable lifespan, the 28% associated with embodied processes of construction offers a significant opportunity to address carbon emissions on the front end of construction. Carbon sequestration will play an increasingly important role in addressing atmospheric carbon in the timespans required to avoid the most devastating impacts of climate change. While much attention has been directed recently to bio-based methods of construction such as mass-timber, there is an expanding array of harvested materials that offer distinct material/structural/spatial configurations, while challenging longstanding construction conventions. As one of the fastest CO_2 to biomass conversion tools, industrial hemp is receiving renewed attention following 2018 US legalization for industrial cultivation. Our research is interested in the affordances of a construction method that serves as a substantial carbon sink, and when constituted as hempcrete, yields unique environmental performance characteristics and tectonic configurations. Our research explores monolithic methods of wall construction that offer an alternative to petroleum reliant systems to leverage the moisture and temperature regulating characteristics of hempcrete composition. It challenges the trajectory over the past decades toward thinner, multi-layered building envelopes to explore hempcrete's unique affordances of thickness and enclosure homogeneity. The first phase of research tested the primary adjustment effect of environmental comfort for a series of hempcrete block types with different densities and surface textures through dual verification of heat transfer simulation and physical experiments. The environment's basic regulation included outdoor to indoor temperature regulation and humidity regulation and their inverse processes, yielding the best performing density and surface texture block type. The second phase of research applies our findings to situate the American house as the site of bio-based material construction. It attempts to answer a simple question - how might a home's material organization and con-struction logic leverage the affordances of industrial hemp to yield a high-performing, low-tech, yet robust method of construction. Using the Pennsylvania landscape as its context, the project illustrates how cycles of hemp farming and processing might yield an incremental approach to construction with an extended process of finishing. It represents an architec-ture of limited extraction in which the monolithic walls of the house sequester carbon while affording substantial thermal performance. The long projecting pitched roof sets forth a logic of linear expansion, while providing the necessary protection during the ramming of hempcrete walls and the extended durability of completed walls. Incremental House embodies a method of construction calibrated to the processes and performance of a harvested material system while leveraging the spatial potential of a thickened envelope.

Moscow Chamber of Commerce and Visitor Center
Scott Lawrence, University of Idaho

The Moscow Chamber of Commerce and Visitor Center, located in the heart of the city's historic downtown, plays a vital role in bringing commerce and community together. Unfortunately, the organization's existing building was not effectively facilitating this role. Instead it was a mishmash of past uses, dating back to the 1920s, ranging from a utility company, to private offices, to a bank. We partnered with the Chamber to renovate the 3,150sf building. The renovated facility better aligns visitor and staff experience with the organization's core mission.

As the city's Visitor Center, the Chamber building has a role that transcends its primary use as office space; it sets the tone for the experience of Moscow through glimpses into the city's unique identity. Each aspect of the design was viewed as an opportunity to connect building to place. This was accomplished by mapping material histories, phenomenological qualities, and cultural iconography onto specific project needs

This ambitious approach, combined with a very limited budget ($14.60/sf), necessitated concurrent applied research into circular and vernacular construction strategies. Students investigated means of incorporating multiple streams of waste material from sources of local cultural significance. The design focused on surgical interventions during the demolition process; moving and reusing existing building elements, salvaging demolished material, and leaving ceiling/ mechanical assemblies in place that would typically be demolished and rebuilt. The project also recalls Moscow's well-regarded history of brickmaking through the development of a mortar-less compressed earth block machine and partition wall system that challenges conventional office wall assemblies.

Through research, collaborative discussions, experimentation, prototyping, and construction students were able to provide a flexible and adaptable home for the Chamber. Integrating project responsive applied research and regenerative approaches resets the boundary for both students and the community of what architecture can be - both as a process and an outcome.

SOCIETY + COMMUNITY: PRACTICES OF DECOLONIZATION

Friday, March 15, 2024, 2:30pm-04:00pm

Reconsidering Practices for Architectural Engagement in Native American Societies

Nathan Jones, The University of Colorado Boulder

In 2021, the American Anthropological Association released a statement criticizing the discipline's role in the exploitation of Native American communities through the methods that many anthropologists undertook in various forms of research. Implicit in this statement is the desire for the discipline to recalibrate its research methods and interactions in Native American societies. This paper shifts the lens from anthropology to academic architecture and its engagement with indigenous peoples in North America. While academic architects have devised culturally sensitive methods in their employment of design projects in the Native American reservation space, there has been relatively little effort to critically catalog these efforts. As a site of investigation, I study university-led design-build projects executed in Native communities representing university architectural programs' efforts to provide housing. My underlying research question relates to how the academic architecture community and its students have grappled with colonial legacies of intrusion, capitalist extraction, and indigenous knowledge and practice to inform the creation and execution of design-build projects for indigenous societies. I focus specifically on the University of Utah's DesignBuildBLUFF program and University of Colorado Boulder's Native American Sustainable Housing Initiative (NASHI). Initially established in 2000, DesignBuildBluff is an annual program occuring in the Navajo (Diné) Reservation, whereas NASHI operated within the University of Colorado's Program in Environmental Design from 2010 to 2015, working in the Pine Ridge Reservation in South Dakota, home to the Oglala Sioux Tribe. Various anthropologists working within and observing the sub-discipline of design anthropology have provided insight into how the discipline might offer an alternative view of architectural professional practice and pedagogy (Chin, 2016; Tunstall, 2013; Schwittay, 2014; Escobar, 2017; Elizabeth Chin, Morgan Marzec, Cayla McCrae, and Tina L. Zeng, 2105). Anthropology can be useful to design studies because it enables an examination of any social order that results from design processes involving the interplay of materiality, meaning, and practice (Escobar, 2017). Speaking to the need of critical attention, Yusaf and Galarza (2014) suggest that in spite of the conscientiousness built into the pedagogy of such projects, practitioners still risk celebrating the asymmetries of power that underpin their successes. Anthropology's attention to the processes of intervention invites a reconsideration of methods and ideologies necessary to elucidate the imbalance in power that Yusaf and Galarza highlight as an effort to truly build with Native Americans rather than for them. Methods - The research upon which this paper is based employs ethnographic research techniques (e.g., formal and informal interviews, participant observation of practice, textual analysis) engaging with faculty leaders and past/current students from both university programs (one of which I am an employee). Contribution - The results of my analysis seek to establish best practices for non-Native, design engagement in indigenous societies, which might inform both architectural education and professional design communities poised to work in indigenous societies. Although architects have adopted numerous ethical practices for engaging indigenous societies amidst calls for decolonizing architecture, a collection and standardization of best practices and methods have yet to be proposed.

Whose Land Are You On? Accounting for Land Acknowledgments in NAAB Accredited Schools of Architecture in the United States

Dongsei Kim, New York Institute of Technology

This paper explores the concept of land acknowledgment, explaining its essence, values, and limitations. Moreover, it sheds light on a notable gap: the lack of land acknowledgments within the higher education institutions in the United States, with a particular emphasis on those that have National Architectural Accrediting Board (NAAB) accredited professional Schools of Architecture. It explores Land Acknowledgment, a term typically referring to a formal statement or recognition made at the beginning of an event, gathering, or document. It acknowledges the Indigenous peoples and their historical connection to the land on which the event, institution, or project takes place. Land acknowledgments are often used to show respect for the Indigenous communities whose land was colonized. The paper analyzes the cultural and pedagogical merits of land acknowledgments within this context. It also endeavors to unpack their limitations, acknowledging that they can be construed as symbolic gestures devoid of substantive action. Furthermore, the paper surveys the inadequate implementation of land acknowledgments within schools of architecture in the United States, especially compared to the schools' hosting institutions. This lack of land acknowledgments is more noticeable when compared to other countries with similar histories of colonization, such as Australia, Canada, and New Zealand. In conclusion, the paper is a brief study of land acknowledgment that offers insights into the value and the lack of land acknowledgments in the NAAB-Accredited Schools of Architecture within the higher education institutions in the US, calling for actions, and pointing to the next steps that would help to build a better inclusive learning environment for architecture students and future architects.

Settled: Culturally and Climatically Attuned Interventions for Ivujivik
Peter Raab, Texas Tech University

This paper explores cultural and ecological resilience offered within prefabricated housing solutions for a small, remote Inuit village at the northernmost tip of Nunavik, Quebec. Nomadic ancestors of First Nations Inuit (Nunavummiut) have seasonally populated this area for thousands of years. Historically erecting temporary structures and camps from naturally occurring materials readily available as they followed animal migration patterns, fishing near the sea, or gathering, farming, and trading during the summer months. Ivujivik translates to 'the place where ice accumulates because of strong currents', where median temperatures range from −24°C in January to 11°C in July. Ivujivik, like much of Upper Canada, is cut off from the rest of the world. An island, not in a geographic sense, but through its remoteness. No roads link this community to the larger cities of lower Canada, nor is this community connected by road to any neighboring communities. It is an edge condition that is being disrupted by climate change. Located just below the Arctic Circle, the harbour is open only 20 days annually. Timing and prefabricated design solutions are essential to providing much-needed housing solutions to this remote part of the planet (Cho and Jull, 2019). This underserved indigenous community is experiencing overcrowding and lacks the necessary means of constructing suitable dwellings to withstand the long, cold winters (Pipin et al., 2018). As an embodiment of culture, architectural artifacts can connect us to our heritage. Inserting architectural forms that ignore the indigenous culture or the vernacular rooted in climate specificity, local materials, and the place is a form of colonialization. Architecture has long been used to establish dominance over native populations by directly embodying power structures and distant cultures they represent (Sheppard and White, 2017). The Canadian government during the 19th and 20th centuries used formal settlements to fix indigenous populations of northern Canada to lay claim to extensive lands to the north. However, this hampered indigenous histories of migration to follow the caribou herds while relying on fishing and whaling to sustain their livelihood. Climate change, overfishing, and the European whaling industry that began in the mid-1800s have decimated the once extensive local food supply and caused local populations to rely on more contemporary means of living. The full paper will investigate the fraught history of northern indigenous people since European contact, colonialization, forced migration and assimilation to the present-day conditions. With impacts of climate change and historical and current extractive practices from whaling and mining to forced migration and their effects on cultural sustainability. With fires raging across Canada, and an existing boreal forest region that offers material resonance through pre-fabricated mass timber as an avenue for this remoteness (Dangel, 2017). Examples from an advanced architectural design studio will be offered as a counterpoint to the ecological and historically fraught contexts to develop culturally sensitive architectural solutions using local resources of Inuit and other indigenous populations and ongoing research of qualitative and quantitative understanding of low-carbon and renewable materials for sustainable architectural design futures.

'Ōlelo Hawai'i Campus: Architecture for Indigenous Language Revitalization and Normalization

Karla Sierralta, University of Hawai'i at Mānoa
Brian Strawn, University of Hawai'i at Mānoa

The 'Ōlelo Hawai'i Campus is a project aimed at supporting the revitalization and normalization of the Hawaiian language, 'Ōlelo Hawai'i.

After the overthrow of the monarchy in 1896, the Hawaiian language was outlawed from schools and replaced by the English language. It was not until the 1970s, during the second Hawaiian Renaissance, that cultural practices were publicly revived, and the Hawaiian language was rightfully acknowledged as one of the state's two official languages. Since then, a small group of community leaders and educators have been working together to develop a complete educational system taught entirely in 'ōlelo Hawai'i. Along the way, the group has grown into a statewide coalition of schools and nonprofit organizations. Their success has seen Hawai'i become an aspirational model for similar indigenous language programs across the nation and around the world. In collaboration with these pioneers, this project aims to support this complete educational system spanning from preschool to Ph.D.

The 'Ōlelo Hawai'i Campus project was co-led by two principal investigators with a team that included students, recent grads, and experts working in close collaboration with six Hawaiian language and cultural education organizations.

Informed by nine Indigenous cultural pathways, multiple phases of user research, programming, and engagement sessions, the design proposes a master plan and three buildings centered on cultural alignments, protocol spaces, and indigenous worldview pedagogy.

A preschool, a production facility, a graduate school and cultural center, and the surrounding landscapes form a campus within a campus dedicated to furthering the Hawaiian Indigenous Language Cycle that goes beyond the traditional linear approach, aiming to extend its impact into orbits of family and community.

HISTORY, THEORY, CRITICISM: FORGOTTEN HISTORY

Friday, March 15, 2024, 2:30pm-04:00pm

The Charlottesville Tapes Revisited: Disciplining Architecture Then and Now

Lauren McQuistion, University of Virginia

In the fall of 1982, Dean Jaquelin Robertson of the University of Virginia's School of Architecture staged a two-day conference on the state of architectural practice. Held in UVA's Rotunda, the closed-door conference included twenty-four invited architects. The group, although ideologically diverse, was notably entirely male and overwhelmingly Euro-American. Those in attendance included established and emerging architects Philip Johnson, Paul Rudolph, Tadao Ando, Peter Eisenman, Robert Stern, Michael Graves, Frank Gehry, and Rem Koolhaas among others. Organized much like a studio review, each architect presented a single, unpublished project which was then critiqued and debated by the group.[1] The full transcript of the proceedings, later published by Rizzoli as The Charlottesville Tapes, was intended as the first in a recurring series of conferences and publications of "architects on architecture" emphasizing the role of designers, rather than critics, historians, or journalists in establishing the discourse of contemporary practice (Figure 1). Organized at a critical moment in the early 1980s, the discipline was caught between competing claims and shifting ideological viewpoints on innovation and tradition, history and theory, and modern and post-modern aesthetics.[2] Rather than resolve these tensions, the event intended to explore the pluralistic state of contemporary practice through a series of open debates, a democratic format, further reinforced by the auspicious setting of Thomas Jefferson's Academical Village. Frequently referenced as an early moment of recognition for the younger generation of invited architects, many of the conference's participants later served in prominent leadership roles in practice and academia, receiving international recognition for their work. As a result, the conference has had lasting repercussions for architectural practice and pedagogy, particularly in the US context. But the selective invitations to participate, drawn from a small, inter-connected pool of male architects, also underscores the longstanding "boys-club" mentality of the discipline, openly referenced by Dean Robertson in his introductory text.[3] As a critical, historical document, The Charlottesville Tapes captures the prevailing tone of architectural discourse in the early 1980s as enacted by an insular group of elite practitioners, a reflection of architecture's attempt to assert its relevancy in an increasingly globalized world.[4] It is also, significantly, a record of architecture's ongoing struggles with racialized and gender-based exclusion from positions of disciplinary authority.Forty years later, this paper revisits The Charlottesville Tapes from a historical, theoretical, and critical lens, investigating the intentions behind the event, its documentation and dissemination, and its legacy within the larger context of changing architectural pedagogy and practice. Critically questioning The Charlottesville Tapes from the vantage point of the 21st century opens a wider set of questions including how we have defined the practice of architecture and its key figures in the US context since the mid-1980s and how we might reassess deeply seeded assumptions regarding the agency of architecture as an autonomous practice. This reflective interrogation then opens opportunities for new models of interdisciplinary design, discourse, and pedagogy and strategies for architecture to engage many positionalities, identities, and place-based knowledge in teaching and practice as tools for addressing contemporary spatial challenges.

Jugoplastika: Women, Plastics and a Factory that Defined a Nation
Dragana Zoric, Pratt Institute

On April 6, 1989, in Munich, Germany, a basketball team from Split, Yugoslavia, became the European Champion for the first time, defeating Maccabi-Elite-Tel-Aviv. The team, Jugoplastika, named after a socialist plastics factory, would go on to dominate again in 1990 and 1991.(1) This paper chronicles the creation of the Jugoplastika factory, a production powerhouse created for and run by women, whose designed and manufactured products defined the Yugoslav lifestyle and its society; and whose architecture was a model both of late European modernism and Yugoslav critical regionalism. Jugoplastika was formed on November 23, 1952, when the communist-government authorities in Split established a company(2) for the manufacture of household plastic goods. In 1950s Yugoslavia, plastic as a material was rare and exotic, a purview of the West, signifying modernization and decadence. Still rebuilding from the devastation of WWII, the country was also experiencing economic repercussions of its break with the Soviet Union. To support that break, in 1951, President Truman asked Congress to provide it economic and military aid; Jugoplastika was created.(3) Texts from the founding documents explicitly state that Jugoplastika was created to: increase the employment of Dalmatian women; to ensure a better supply of consumer goods, mass necessities that contribute to modernization; the development of visual and physical culture. These three objectives would characterize Jugoplastika throughout its existence. To that effect, the factory manufactured polymer products: housewares, clothing, shoes, toys, luggage, appliances, anything and everything, an unimaginable range of 3,200 different items, generating $350-million per year.(4) "At the height of its power, Jugoplastika was a manufacturer of plastic accessories without which the life of an average Yugoslav could not be imagined"(5). The average citizen wore a Jugoplastika windbreaker, all children carried Jugoplastika school bags, played with Jugoplastika toys, and wore adidas-licensed Jugoplastika sneakers. Citroen, Renault and Volkswagen auto parts were manufactured by the women of Jugoplastika as was the ubiquitous 5.8-meter-long plastic boat with an overhead cabin that most Dalmatian families used for after-hours recreation, the "volkswagen-of-the-sea".(6) Similarly, the architecture of the factory campuses was decidedly modern, intended to represent the state in all its newfound progress. The Split campus (1968-2004), designed by Lovro Perković (1910-1998), used the structuralism of the award-winning prefabricated system "Perkovic type1", its western facade a relentlessly abstract striped assemblage of vertical black and white lines.7 At the peak of its production in the 1970s, Jugoplastika employed 13,000 people, over 10,000 of whom were women. In Jugoplastika, women sewed, cut, injected, and operated machines. Many were designers, managers, and directors. In a patriarchal region where salaried jobs catered to men, women saw emancipation through their own earned income, an increased standard of living and a redefined social sphere. Jugoplastika, factory and team, both ended with the dissolution of Yugoslavia. This extraordinary entity was seen as tainted by the pluralist and mutli-ethnic values of Yugoslavia, a relic to be discarded. Today, it is an example of a multi-pronged effort where design and production by women had the utmost importance for a nation. It can be replicated.

Processional Dérive: Review of New Orleans Black Masking Indian Parading as Psychogeographical Praxis

Thomas Mouton

This paper will review the Black Masking Indian culture of New Orleans, Louisiana through the lens of Henry Louis Gates Jr's. Signifyin(g) concept as well as concepts from the Situationist International (SI). Outside of New Orleans they may be more commonly known as Mardi Gras Indians, but Black Masking Indians will be used throughout the paper. Gate's literary concept allows for a historicization of the Black Masking Indian culture as a series of subversive acts by utilizing the rhetorical black homonym to contextualize the Black Masking Indian processions not merely as just another organization parading during Mardi Gras. With the inclusion of literary concepts, these place-making performative rituals embody AbdouMaliq Simone's Generic Blackness which "points to the substrates of city-making which prevailing regimes of urban power can never fully apprehend or control". Literary concepts are crucial to overcoming these issues of apprehension, illuminating the complexity inherit within any marginalized community's inhabitation of space. Utilization of literary concepts allow for apprehension of the performative processions as radical spatial praxis with recognizable similarities to psychogeographical concepts developed by the French collective. In Black Masking Indian procession's one will find variations in application of Psychogeography which allow for the study of specific effects of the urban (geographic) environment on the emotions and behaviors of individuals when conducted by racialized groups. The sections proceeding the initial literary review will critically examine the lack of inclusive Psychogeography studies from the SI. As Khatib was the sole none white memeber of the SI, examination of Abdelhafid Khatib's failed attempt at a psychogeographic study raises critical questions for the application of SI concepts with marginalized communities. Overall the goal of this paper is to examine the potential inclusion of literary concepts countering the typical reading of the Black Masking Indian processions and New Orleans Mardi Gras as "one in the same." Presented as such is characteristic of a Eurocentric hegemonic observation, both in its failure to identify the micro-cultural events as radical spatial praxis and its perpetuation of passive racist tropes of marginalized communities as void of agency and incapable of self-actualization. Insights from this comparative review provide a critical lens in which to view the social, geographic, and historic separation between the SI and Black Masking Indians. What can be concluded from this comparative review is how the complexity of subaltern urban spatial inhabitation requires the synthesis of theorists not often associated with spatial studies. This of course highlights the continued predominance of white Eurocentric spatial theories and the need for a pluralistic methodological approach that develops a critical spatial discourse incorporating theories from the Global South as well as literary concepts.

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An Architectural Imaginary of Identity and Exclusion: Drawing Out the Legacies of Japanese American Designers after WWII Incarceration

Kelley Murphy, Washington University in St. Louis

This multifaceted project incorporates the research, public discourse, exhibitions, and pedagogical initiatives that explore the legacies of the Japanese American designers, architects, and artists impacted by the Japanese American Incarceration in WWII. The research launched with Beauty in Enormous Bleakness: The Interned Generation of Japanese American Designers, a Divided Cities, Mellon-funded collaborative project between architectural designer Kelley Van Dyck Murphy, cultural historian Heidi Aronson Kolk, and architectural historian Lynnette Widder. The project seeks to document the lives and works of Japanese American designers who survived internment, focusing on their vital contributions to the post-war cultural landscape while also acknowledging their lived experiences.

An exhibition, developed from the foundational research project and co-curated by Murphy and Kolk, placed personal artifacts, archival documents, and storytelling in conversation with architectural sites – evoking concepts of dislocation, erasure, and identity. The symposium, Moonscape of the Mind: Japanese American Design after Internment emerged from the Beauty in Enormous Bleakness research project and exhibition, and expanded the scope of the project to encompass a broader range of artists and designers. The cross-disciplinary symposium brought together scholars from a range of humanities and art/design fields to explore the legacies of the Japanese American WWII Incarceration through an exploration of the connection between material objects and their creators' lived experiences.

Concurrent to the symposium and exhibition, Murphy began teaching an ongoing series of case-study courses about the work and lives of post-war Japanese American designers. As a designer and educator, Murphy is dedicated to advancing the conversations around diversity and cultural heritage in architecture and design. While the research projects and pedagogical work aspire to support a more diverse and inclusive architectural history, they also underscore the significance of how race, heritage, and context – cultural, historical, and material – impact the architectural landscape.

PEDAGOGY: DESIGN COLLABORATION AND PARTNERSHIP

Friday, March 15, 2024, 4:30pm-6:00pm

Decolonizing Design with Indigenous and Land-Based Paradigms

Honoure Black, University of Manitoba
Lancelot Coar, University of Manitoba
Shawn Bailey, University of Manitoba

"Land refers to the ways we honor and respect her as a sentient and conscious being" (Styres, 2019, 27) How can we decolonize design practice and create a reciprocal praxis for both Indigenous and Non-Indigenous practitioners, students, and scholars? This is a question as both Indigenous and settler scholars, we have begun to address through the development of a new methodological praxis with guiding paradigms. By embracing the Ojibway concept of Mino-Bimaadiziwin, the good life for all nations people, we engage with the land as pedagogy, Indigenous knowledge, and process-based experiences though exploration, contemplation, and reflection in our work and teaching.   We have developed Five Decolonizing Design Paradigms for Kahnowiilyaa (Everyone), and in conjunction with new land-based teaching initiatives within the Faculty of Architecture, we invite collaboration, community, and above all a return to the Land as the guiding principle in our work. The paradigms that have come out of this work to be presented and explained with examples are: Danakamigad: it takes place, happens in a certain place; Andotan: listen for it and wait to hear it; Bawaajigan; a dream, a vision; Meshkwad: in turn, in exchange; and Naagotoon: make it show, reveal it.   Through the Indigenous method of storywork, we self-locate while (re)telling our experiences working through each paradigm. We believe that this is a new way forward for everyone in the design disciplines as we all work towards reconciliation. As John Borrows so clearly states in his essay Earth-Bound: Indigenous Resurgence "We are earthbound, and our laws and practices must be revitalized to recognize and respond to this vital fact" (Asch, Borrows, Tully, 2018, 69). Key Words: Indigenous Knowledge, Reciprocity, Reconciliation, Community, Land, Collaboration

Reimagining the Alaska Atlas

Amanda Aman, University of Texas at Arlington

Alaska has always existed with a ghosted veil of polar romanticism where eternal sunsets and magical aurora bring life to untouched landscapes locked within the grip of deep freeze. These landscapes are greatly embedded with histories of habitation and of seasonal movements of people and wildlife in a vast nomadic range. They are layered with traces of the intimate relationships held with these histories, as their inherent ecologies do not distinguish what is human and what is not. A deep understanding of the behavioral intricacies of these systems exists as a function of this interdependence for Native peoples. In Alaska, this finds expression in an elaborate vocabulary about the formation and type of ice, for example, but one which also describes its sentience and its agency – the same principle being applied to animals – so as to be completely in tune with what is both seen and hidden. These relationships are subject to harsh realities, however, with the insurgence of climate change. In addition to the continued grappling with the effects of colonization and modernization, their subsistence lifestyle that defines their culture – their relationships, philosophy, spirituality, healthcare, artistic expression, education, economy, and more – is being severely threatened. This research and design studio activated a new mapping approach that informed a more holistic Alaska atlas through the analysis of ephemeral geographies – the collection of agents, systems, ecologies, economies, and histories that are perpetually in flux – to allow for these geographies to become the primary lens by which the complex ecosystems and subsistence landscapes of Alaska's Native peoples are viewed and understood against a backdrop of drastic environmental change. The analysis and modeling within this approach evaluated the proposed Alaska Long Trail and the geographies, both physical and ephemeral, it is tethered to as it will serve a secondary function as an index for measuring seasonal change. The proposed multi-modal and multi-season trail will connect Seward to Fairbanks as it traverses cross sections of variegated geographies and ecologies and the cultures intertwined within them. Given the inextricable link between the trail geographies and those of numerous Alaska Native tribes, students were challenged to generate a narrative-driven platform for community advocacy. Students traveled to Alaska for site research and presented this work at a regional symposium where they also participated in a workshop designed to engage practitioners and Native community members and representatives in the development of projects. Following these events, place-specific architectural interventions were then designed to address realities assembled from existing conditions and the community engagement process. One of the greatest learning outcomes was focused on students becoming intimately familiar with the relationships between the layers of data within their mapping and what those relationships ultimately communicated about the worldviews of the people and geographies being mapped. Through the rigorous implementation of this method, students were able to confidently advocate for them in really knowledgeable and nuanced ways, a skillset that is critically necessary in the current landscapes of inequity and urgency.

International Partnerships at a Distance: the ethic and value of community engaged design in contexts far from the studio setting
Courtney Crosson, University of Arizona

Over 60% of the population of Nairobi, Kenya lives in informal settlements. These settlements are often located in the lower elevations of the city and susceptible to annual flooding. Residents experience chronic property destruction and deaths during the two rainy seasons of the year. Climate change is projected to significantly worsen these impacts. The informal settlement of Kibera hugs the Ngong River and its associated streams. This paper presents a partnership between one Bachelor of Architecture studio, a Nairobi design organization, and residents of Kibera to create five adaptive design solutions to chronic flooding in critical points along the Ngong River and associated streams. This paper presents a pedagogical framework for long distance international partnerships, starting with a Memorandum of Understanding. Students engaged with the local design organization and residents in a series of eight zoom meetings. Live video tours of sites were provided. Students completed a series of quick projects at the start of the semester to engage with a variety of local issues using locally found materials to build a foundational new language of design approaches and materials. Students conducted online surveys with site residents after midterm to further gain information to complete their design solutions. The professor had lived in Nairobi for two years prior to the studio course and provided continuous context and background to the students. Overall, the five final projects worked as a network along the Ngong River to reduce annual flooding by 1,202,000 gallons (691,000 gallons through passive water harvesting design measures and 511,000 gallons through active water harvesting measures).   Within this pedagogical framework of long-distance engagement, the paper questions the ethic and value of teaching design to students using a location that students are unable to visit and with a cultural background separate from the students' lived experience.   The paper argues that digital tools are a successful way to engage in international partnerships and succeed in pedagogical objectives without the expense and carbon footprint of travel. The paper frames this argument through the presented pedagogical framework, resulting five flood mitigation projects designed by the studio, and the feedback provided from the community members about the produced work.

Diversity, Equity, And Inclusion In International Design Studio Pedagogy

Madlen Simon, University of Maryland
Shaimaa Hameed Hussein, Al-Nahrain University

Five years after the conclusion of the United States' invasion of Iraq, faculty from an Iraqi university and a U.S. university began collaborating online to co-teach an urban design studio that brought U.S. and Iraqi students together through our shared language of architecture. We set out to investigate one another's contexts and cultures through the design process. As the studio has evolved over the past eight years, the faculty have developed a set of insights into the pedagogy of cross-cultural collaboration in a post-conflict situation. War was experienced diametrically differently by the Iraqi and U.S. students. In Iraq, violence and destruction was the everyday reality; in the U.S., the war was consumed through the media. Schulte-Sasse and Shulte-Sasse (1991) write that "representations of war are an integral part of economy of signs that engineer the fortification of the national body as 'Oneness' on the basis of excluding or marginalizing alien elements as 'Otherness.'" Five years post-conflict, our challenge was to bring young people from both countries together in a way that broke through enmity and otherness to discover shared humanity. Post-human theory posits that "we-are-in-this together-but-we-are-not-one-and-the-same." (Braidotti, 2017) We strive to replace the construct of otherness with an understanding that we are all citizens of our planet and invested in a shared future. In this paper, the U.S. and Iraqi faculty reflect upon the ways in which our pedagogy replaces enmity and otherness with diversity, equity, and inclusion in the architectural design studio. We identify a set of themes that promote these values in our cross-cultural collaboration: (1) Iraqi and U.S. students are the experts on their own contexts and cultures – we respect local knowledge and resist the "white savior" tendency (Fisher, 2016), (2) studio projects and sites are carefully selected to highlight the fact that we face similar physical and social issues in both countries, (3) the United Nations Sustainable Development Goals offer a shared framework for the work of students across the globe as we all confront the critical issues of our time, and (4) diverse teams generate more ideas, knowledge-sharing is key to success. (Chamorro-Premuzic, 2017)

The Activated Atlas
Erin Kasimow, University of Southern California

The Activated Atlas was a series of 3 advanced topic studios comprised of upper level graduate and undergraduate students at the University of Southern California School of Architecture. Born out of the pandemic and the first semester of studio taught entirely via screen in fall 2020, it sought to exploit these conditions and invited students to harness the immediacy of working with film, photography, and social media as a way to literally locate one's self and one's architectural project and story within the city. Using the oft photographed and filmed Los Angeles as a case study and wary of the stereotypically superficial image it is often lazily assigned, we considered the contradictions and eccentricities of LA, the highs and lows. Together as a studio, using animation, filming on location throughout the city, direct interviews with community members and research we assembled a collection of drawn and animated mappings that created multi-layered images of various neighborhoods and enclaves in Los Angeles. We explored how the formal and the material can yield to the social, political, and cultural through critical design proposals that represented inclusive and original stories. We actively sought out opportunities to debunk incorrect assumptions, reveal hidden histories, and make unusual connections through narrative and image. Each semester focused on a different neighborhood or region of Los Angeles and culminated with wildly different design proposals generated from student's individual responses to the prompt of a socially conscious space. Proposals were shared entirely via short films and animations and ranged from speculative futures to the currently implementable — landscape and urban infrastructure, adaptive reuse, guidelines for new service industry standards and street vendors, installations and community based events.

In-situ Robotic Construction: A Technological Approach to Housing Affordability

Steven Beites, Laurentian University
Marc Arsenault, Laurentian University
Ethan McDonald, Laurentian University

Housing supply challenges are looming large, with estimates suggesting a need for 2 billion new homes over the next 80 years to accommodate a growing global population. Governments, including Canada, are striving to address this issue through ambitious housing development initiatives, but the complexity of the problem calls for more than just policy strategies. To meet such targets, radical and fundamental shifts are required across all stages of design and construction. This paper introduces a technological approach to housing through the development of a cable-driven parallel robot (CDPR) as an innovative and alternative method for in-situ construction. CDPRs have the potential to transform current methods of construction, by eliminating the requirement for highly skilled labor, minimizing waste, and significantly reducing costs and construction timelines. Through a cross-disciplinary collaboration between engineering science and architecture, this paper presents the research conducted towards the development of a functional prototype, one that is highly flexible, portable and modular ensuring the provision of a physical platform for construction. As architecture continues to be bound by outdated methods and high costs of construction, bold technological explorations are required to unlock new territories in delivering affordable and accessible housing, representing a significant step toward a future where housing supply can keep pace with the ever-growing population.

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SOCIETY + COMMUNITY: TACTICAL INCLUSION
Friday, March 15, 2024, 4:30pm-6:00pm

By Right or Might: notes on the MPL-Collective's self-managed social housing projects
Gonzalo Munoz-Vera, Carleton University

In Chile, under dictatorship, the urban planning policies imposed in 1978 forced the relocation of vulnerable communities towards the growing periphery of the Greater Santiago area. The imposed strategies caused expected inequalities in people's quality of life, such as limited access to goods and services, inefficient public transportation from and towards the city centre, and class division. After constant indifference and futile responses from local and government authorities, members of the MPL collective (People on Fight Movement) have confronted this social housing problem since its foundation in 2006, voicing the displaced communities' demands to own a house within their districts and people. Through radical action and self-management proposals, the MPL collective has put in practice active measures to make their just demands heard at all costs, representing their Penalolen district in the Greater Santiago area. The task has been far from simple. However, after arduous work that includes protests, effective organization, and mobilization, they have materialized social housing projects that emerged from participatory design among dwellers along with the assistance of freelance architects and related trades. These assistants have shared the MPL's vision of contributing to city-making and living from dwellers' perspectives over private and real estate interests shaping today's city's future. This paper aims to discuss and expose the MPL's experience on its few built and self-managed housing projects to date, which perseverant work is slowly achieving its goals in a country that ignores the urgency of accessing a decent property, let alone one that resists the constant natural disasters proper from the region. Relevant to what this collective has done is the historical Chilean housing policy, particularly during the second half of the twentieth century and right before Chile's dictatorship era, which this paper also refers to. Besides, and from the perspective of someone that joined the MPL collective, this paper also analyses other social housing projects in Chile to compare and contrast goals and scopes from non-public organizations versus architecture self-managed by people. Therefore, private social housing responses from recent years, such as Alejandro Aravena's Elemental projects, are discussed to ponder on new strategies but also on being observant of the means and objectives behind these non-public efforts. In today's Chile, the neoliberal urban planning policies imposed under dictatorship still rule and determine the land value and, therefore, the localization of social classes. The solution to this situation seems to be in the hands of the community, which has shown compelling experiences in housing and territorial planning, such as those led by the MPL collective. These communities, however, rely on feedback and support from disciplines related to architecture and urbanism to fulfil their goals. Ultimately, this paper aims to contribute to understanding how future architects and educators can learn from these community-engaged cases, self-management, and mobilization to provide significant involvement and improvement on social housing design and planning and, therefore, equitable access to and participation in the city.

Trans- And Gender-diverse Perspectives On Gender-inclusive Student Housing Options, Design Features, And Plans

Casey Franklin, University of Kansas
Sam Church, University of Kansas

Trans- and gender diverse (TGD) people face increasing discrimination in architectural environments; in the past two years multiple states have enacted anti-LGBTQ laws that use sex or gender identity to restrict use of spaces like restrooms and student housing (Movement Advancement Project 2023). A national trans- survey found over half of respondents avoided using public restrooms entirely fearing confrontations, and that approximately a quarter of college students experienced verbal, physical, or sexual harassment (James et al. 2016). Architects have a unique opportunity to alleviate this discrimination through design decisions that support and protect TGD users, especially on college campuses. This mixed-methods survey investigated TGD student opinions of gender-inclusive student housing (GISH) design elements. Quantitative questions were used to gather demographics information, GISH experience satisfaction, and comfort level for design features. Emotional heatmaps and open-ended questions provided qualitative feedback explaining why floor plans designs and interior photos made TGD users uncomfortable. TGD students reported dissatisfaction with current GISH options, and consistently reported feeling more comfortable in gender-inclusive spaces. While the majority (50%) of TGD students in this survey had access to GISH, the majority (66.6%) also reported being dissatisfied with GISH options. Researchers tested the hypothesis that TGD users would rate comfort differently than cis-gender (cis-) users in gender inclusive spaces. This was found to be true for multiple scenarios, but not all. Image and floor plan heatmap questions asked participants to select architectural features causing discomfort and provided in-depth explanations for why. Text-based data was analyzed and showed strong themes of security, privacy, and sense of belonging. Triangulated data was used to create a set of design guidelines which support these same principles. Both architects and universities can benefit from this in-depth exploration of how design decisions impact overall TGD student comfort in GISH.

Designing Out: A Framework for Studying Hostile Design

Solmaz Kive, University of Oregon

As Michel de Certeau has argued (1984), the public space is not inert. Rather, a spatial order organizes an ensemble of possibilities and interdictions, some of which are actualized by the user. However, the public space affords fewer potentials to the marginalized sectors of the society, for instance, intentionally excluding unhoused people. Homelessness is a complex topic. Many structural issues lead to income inequities, policies, and the lack of affordable housing. Yet the media often represent people experiencing homelessness as failed individuals, either to promote pity (and to some extent empathy) or portray them as incapable and indolent (Lugo-Ocando 2019). The built environment plays an important role in the criminalization of homelessness. The relatively new term "hostile architecture" (also known with similar terms like "hostile design," "unpleasant architecture," "defensive architecture," and "disciplinary architecture") refers to the use of design to prevent people from using a space or an object in an unwanted manner. Some common examples of these strategies are the use of dividers on benches (figure 1) and the curbs to prevent skate boarding. Hostile architecture, as Petty (2016) points out, intentionally "designs out" certain identities from urban and public spaces. While it is used to target different user groups (like teenagers, skateboarders, and addicted people), it has become increasingly popular against unhoused people. Unlike punitive measures, hostile design does not punish the homeless in an explicit way. Instead, it aims to remove the problem of homelessness out of sight, foreclosing the possibility of encounter, and hindering the unhoused people's participation in the production of public space (Petty 2016). As Iveson (2008) points out, this approach to homelessness does not only prevent the unhoused from using the space, but it redefines what the "public" means.   While explicitly hostile examples, such as spikes on sidewalks, more obviously signal their function of preventing one from sleeping on them and may make the housed population morally uncomfortable (Petty 2016), more subtle strategies do not attract public attention. For instance, boulders or bike racks under bridges do not attract the attention of most residents, except for those in need of a shelter from rain (figure 2). In fact, the most successful examples of hostile design disguise their true purpose. In contemporary American cities, the visible homelessness is often rejected as part of urban beautification projects (Speer 2019). Not surprisingly, thus, many hostile designs are aesthetically pleasant (figure 3).   This paper would offer a working typology for studying hostile architecture and discusses a strategy of engaging students with the uneven affordance of the public space through mapping its hostile design in the city (figure 4). Mapping these examples of hostile design in the city close to some of their favorite public spaces challenges students to see their ubiquity in their everyday life. Similarly, the accumulation of dots in this area and indicated how little the city accepts its struggling population.

Common Tactics: An Approach to Attainable Infill Housing

Michael Harpster, University of Nebraska-Lincoln

Despite the clear environmental and economic benefits of denser forms of housing and the obvious need for an increase in the country's housing stock, the ability to actually construct denser forms of housing remains incredibly elusive. Zoning ordinances structured to protect the low-density enclaves of the homeownership class make the construction of dense housing typologies within established neighborhoods a near impossibility in jurisdictions across the United States.   The purpose of this paper is to consider the architect's role in the face of these regulatory restrictions and to present a framework for realizing alternative models of housing through a tactical subversion of local zoning ordinances. The paper presents two low-rise housing projects that illustrate how architects might leverage community coalition building and the critical application of local zoning ordinances to realize dense, in-fill housing projects even within otherwise highly-conservative policy environments.   Using Michel de Certeau's conceptualization of tactics as an initial framework, that paper considers how architects might work against the negative constraints of particular zoning policies and operate effectively from a place of weakness. As Certeau notes: [A tactic] must vigilantly make use of the cracks that particular conjunctions open in the surveillance of the proprietary powers. It poaches them. It creates surprises in them. It can be where it is least expected. It is a guileful ruse. In short, a tactic is an art of the weak. While architects have little control over the broader zoning and regulatory policies that inform their work, embracing the role of tactician can allow the architect to explore the "cracks" that exist within such regulatory frameworks and to realize built "surprises" that might have previously seemed unattainable. Working against the broader strategies of planning and land use management that tend to prioritize private ownership and the commodification of housing, tactics centered around ideals of common ownership and the public good can be utilized to realize more equitable housing models.   Sited on infill lots in Lincoln, Nebraska, the projects presented here rely on a tactical implementation of a Community Unit Plan (CUP) zoning mechanism to enlist neighborhood support and to establish higher levels of allowable density than otherwise allowed under the municipal zoning ordinance. This tactical exploitation of a "crack" in the zoning ordinance, in combination with the implementation of a Community Land Trust, allows both projects to introduce a greater quantity as well as a greater diversity of housing types in areas historically dedicated solely to the normative, single-family home.   In response to the need to expand the discipline's boundaries and to mine its edges for greater cultural relevance and social impact, the work presented here illustrates how a tactical engagement with zoning policy might allow the discipline to have a more direct and immediate impact on the built environment. And while the results illustrated here remain limited in scope and contingent on local policy, the projects nevertheless demonstrate the ability of the architect to operate pragmatically, to engage the realities of regulatory frameworks to realize immediate, if incremental, innovation within conventional culture.

HISTORY, THEORY, CRITICISM: SOCIAL DESIGN & THEORY

Friday, March 15, 2024, 4:30pm-6:00pm

This Presentation has been removed and will not be presented at the conference

Indigeneity on Global Grounds: Native American Cultural Centers on University Campuses in the PNW

Babita Joy, University of Washington

The Coast Salish tribes of the Pacific Northwest are known for their distinct built spaces for communal and ceremonial life. A number of educational campuses in the US stand on lands historically occupied by Indigenous people, who over time have been displaced, stolen from, and erased from the physical environment. This paper traces the origins and growth of the now commonly seen Native American cultural centers, representative of native life, on university campuses in the US.   While this research surveys a number of examples to understand these built spaces in a broader perspective, it primarily examines 1. the materiality of these centers as places of making visible the marginalized Native diaspora 2. It emphasizes the design voices of the outliers involved in making these spaces. This paper focuses its attention on three Indigenous cultural centers in the Pacific Northwest: The Intellectual House (previously known as the House of Knowledge) and known to the native community as wəɫəbʔaltxʷ (pronounced, wah-sheb-altuh) in the Lushootseed language, at the University of Washington, Seattle campus; The House of Welcome, the first purpose-built Native Center on a public university campus in the US on the Evergreen State College campus in Olympia, Washington; and the Many Nations Longhouse on the University of Oregon campus in Eugene, Oregon. All three of these centers were designed by Johnpaul Jones of the firm Jones and Jones. A Native American himself (Choctaw/Cherokee) and a recipient of the National Humanities Medal in 2013, Jones designed each of these centers with a strong indigenous materiality focus. Using building materials and design ideas that originate from the native culture, the Native Centers' architectural vocabulary exercise a mighty presence in the universities. These centers stand as a statement of resistance, becoming the locators and indicators of the dynamics between cultural identities, political powers, and settler-colonial dominant forces surrounding them, physically and symbolically. This paper argues that while historiography of indigeneity often suggests the ephemeral, i.e., stories, songs, folklore, etc., these Native centers underscore a contemporary architectural history for indigeneity. These case studies underscore the non-western design approaches taken on by the outlier designers in making these culturally sensitive Indigenous spaces within university campuses. The great efforts to listen to voices in the communities and to use Indigenous material connections in the designed spaces reflect the intentional significance given to traditionally marginalized native worlds. This research focuses on how materiality-focused designs embody indigenous identity, support a space for belonging in competitive and global university campuses, and enable a cultural reparative agenda for a people relegated to the edges of physical environments or are most often made invisible.

Ordinary Form, Radical Ideology: Decolonizing the Historical Narratives of America's Expansion

Jared Macken, Oklahoma State University

At the turn of the 20th century, a hole existed at the center of the United State's land acquisitions—a large portion of land known as Indian Territory. This land belonged to Sovereign Nations who were forcibly moved to the center of the United States from other parts of the country. While this land legally belonged to Native American tribes, the United States Government was systematically deconstructing land treaties and taking back land in a desperate attempt to fill this territorial void.   By the middle to late 1800's the U.S. Government initiated a new strategy for colonizing this land, and an explosion of urban development occurred in this territory. The government's process for taking back this land was a systematic colonization scheme that was facilitated by the construction of towns—colonization machines that acted as large-scale land speculation. This system utilized a type of phased-in development operation that first involved making the land a commodity, then created desire for this land resource, and finally offered incentives for White Western European settlers to occupy this land. In contrast, culturally accepted historical narratives, in particular those found in present-day Oklahoma, does not reflect this intention and favors narratives that mythologize "settlers" and "pioneers" through the fiction of manifest destiny. This narrative leaves out the true intentions of these towns and as a result suppresses the narratives of under-represented communities who were also urbanistically transformative at this time.   This project explores these alternative historical narratives and examines their architectural form in conjunction with their community's ideologies. One such history that is uncovered in the project is the phenomenon of over 50 "All-Black Towns" that formed in this territory before it became the state of Oklahoma, and therefore before it was governed by segregation laws. The project retells the architectural story of Boley, a town founded in 1903 by freed Black men and women of the Muskogee Creek Nation who created a utopian city in the middle of the prairie that has created lasting impacts in our contemporary political and cultural climate. Boley's radical ideology of freedom for Black citizens can be tied directly to the urban form of its town, predating mainstream architectural projects that occur 15-20 years later in Europe. As a result, an understanding of the form and ideology of "All-Black Towns," Boley in particular, rewrites not only America's history of Westward Expansion, but also architectural history as it pertains to its discourse on the city.

Cultural Disrupter on the Edges of the Arctic Archipelago: A Critical Analysis of the Architecture of the Fur Trade

Samuel Dubois, Massachusetts Institute of Technology

This paper frames the architecture associated with the fur trade as a cultural disrupter throughout the Canadian Arctic in the early twentieth century. By constructing and living in trading posts along the edges of the Arctic Archipelago, fur traders exposed Inuit communities to various materials, building techniques and cultural norms that were alien to Inuit traditions—functionally, aesthetically and cosmologically. This exposure engendered historically consequential transformations in the material, spatial and ontological reality of the region's built environment. Thus, the overarching goal of this paper is to substantiate the claim that the architecture of the fur trade, framed as a cultural disrupter, was instrumental in instigating a wide-ranging process of cultural hybridization throughout the Canadian Arctic at the turn of the century. Here, cultural hybridization is understood as a process whereby an element (tangible or intangible) from Western culture blends into the built environment historically associated with Inuit culture and vice versa. (1) In the specific context of the Arctic, this paper argues that this type of blending happened not only to facilitate functional aspects of northerners' daily life, but also to fit changing cultural norms of "luxury" as well as capitalist imperatives associated with the fur trade industry. More importantly, this paper suggests that cultural hybridization, manifest in many ways, scales and seasons, contributed to setting the stage for the de-nomadization—and thus alienation—of the Inuit people in Canada as a settler nation. A physical example of cultural hybridity brought by the architecture of the fur trade was the use of Western-made tools (e.g., snow shovels), imported materials (e.g., wood planks and glass) or pre-assembled building systems (e.g., windows, doors and chimneys) by Inuit to construct parts of their homes with. In addition, a symbolic example of the same hybridity can be evidenced by the presence of clocks in igloos (see historical photographs attached), which had the effect of regulating Inuit lives on a 24-hour basis, in recurring 7-day periods. Seemingly innocuous and beneficial from a strictly functional standpoint, what came out of these material exchanges and semiotic crossings led to a slow and non-coercive cultural hybridization process. Unlike missionaries or government officials, whose actions in the North were often ideologically and politically motivated, the relationship between Western fur traders and Inuit communities was chiefly based on commercial activities and trading partnerships. In other words, while the fur trade's raison d'être was not assimilation, it still brought about a form of alienation manifest in architectural production. As we look ahead to the next 25 years, this paper will show how the architectural history of the fur trade in the Arctic, understood as a disrupter on the edge, can inspire us to address contemporary urgencies related to decolonization effort and Inuit empowerment, both in Canada and the United States. Furthermore, this paper will provide nuanced historical evidence that can inform current design practices (and advance future ones) in the North, while shedding light on architectural history and theory as disciplines in their own rights.

Discourse on Indigenous Vernacular Typologies in Architectural Education and Pluralism
Shillpa Kumar, University of Texas at Arlington

This thesis explores the development of architecture curricula to incorporate Indigenous design methodologies that are vernacular to the context. The systematic erasure of Indigenous peoples, cultures, and histories from the architecture Western cannon limits a holistic education for students, and therefore perpetuates traditionally European ideas and methodologies which cannot functionally conform in foreign landscapes, and lacks social and environmental relevancy.

PEDAGOGY: PEDAGOGY IN DESIGN
Saturday, March 16, 2024, 9:00am-10:30am

Excavating the University Campus: A Pedagogy of Deconstructing Architecture's Myths
Leen Katrib, University of Kentucky

Much of architectural pedagogy focuses on architecture-as-construct—we analyze its history; its form; its transformation of context; its theoretical parameters; its dissemination; its exhibition. Through that predominant framework, little has been devoted in architectural pedagogy to uncovering the social and cultural implications behind the construct and its perpetuated myths. In the United States, such implications are all but invisible in the typology of the university campus. Countless urban campus expansions from 1950 to the present day were justified under the guise of slum clearance and in the name of progress and higher education. Such construct came at the expense of demolishing and marginalizing primarily Black and immigrant neighborhoods, leaving little to no material trace of their histories or a comprehensive record of this pattern of destruction. This paper seeks to offer an interdisciplinary and collaborative model for design seminars to examine the very conditions that have guided the practice, pedagogy, and historiography of architecture. Excavating the University Campus is a research-integrative design seminar that positions students to uncover comprehensive, untold histories of destructions in the wake of postwar and ongoing urban university campus expansions across the United States. Through 5 case studies spanning chronologies and geographies—IIT in Chicago, Auraria Higher Education Center in Denver, IUPUI in Indianapolis, USC in Columbia, and Columbia University in Manhattanville—students critically examined official campus histories by deconstructing their design tactics, linguistic nuances, alliances, and the architect/planner's design tools and methods. The design seminar launched with a series of tailored "excavation exercises" that challenge students to source interdisciplinary knowledge and tools in order to map, spatialize, and metricize the extents of erasures through two-dimensional, three-dimensional, image-, audio-, and text-based translations. The excavation exercises involved scavenging the digital collections of state and university archives, state clearinghouses, historical societies, and regional newspaper archives; retrieving and analyzing historical documents, including Sanborn maps, Board of Trustees meeting minutes, and state and federal policies; identifying anthropologists, urban archaeologists, geographers, and administrators at the campuses they were researching to record interviews; retrieving oral histories from former residents or their descendants. The exercises were theoretically grounded in a curated selection of foundational texts by architectural historians, anthropologists, historical archaeologists, and geographers who interrogate the material afterlife of destruction in the built environment. Ultimately, students designed multimedia animations and short films that contribute to a counter-historiography on each case study by juxtaposing, superimposing, and clustering layers of retrieved materials and produced visualizations to create new assemblages that subvert official narratives.

Homing Objects: From Writing to Making

Angeliki Sioli, Delft University of Technology (TU Delft)
Pierre Jennen, Delft University of Technology (TU Delft)
Anca Matyiku, McGill University

Can architects design with words? Can they move from words to models and then hands on making, bypassing the medium of drawing altogether? "Homing Objects" was a recent four-week workshop that tested this possibility. The workshop–part of the master level design course "The Space of Words" which explored different ways to address the above questions–was taught by three architects combining expertise in architectural theory, building technology and timber construction. "Homing Objects" asked architecture students to fabricate unprecedented domestic objects that were dreamed up and drawn out through language. "Homing" (borrowed from messenger pigeons) intends to turn "home" into a verb and an act, through a journey into memories and words that engender new possibilities of enacting and finding home, disrupting our preconceived notions about home and domesticity. We introduced the students to literary texts that describe everyday familiar objects. This introduction was meant to question and bring forward new possibilities of what a domestic object can be, as the literary texts offered unusual, uncanny, and unpredictable ways of seeing and relating to these objects. Following the close study of these texts, students were prompted to bring objects from their daily life to a shared common table. They "warmed up their inside voice" by writing short descriptions for three of these objects, in such a way that objects were hidden between the lines and were not named directly. This instruction pushed the students to see the familiar otherwise. Then they imagined possible combinations of these objects (or parts of these objects) that would create unprecedented new ones. Based on these imaginary combinations they proceeded with writing narratives that would describe, explain, and envision the new objects in the space of a home. Iterations of these narratives harvested, always in writing, design ideas for experiential qualities of these unique objects. Through writing and re-writing, many students moved further in envisioning objects that did not connect any more with the ones that were brought to the shared table. The students moved then to scaled models that gave the imagined objects a three-dimensional presence. The decision to exclude drawings from the process shifted the focus from what these invented objects might look like, to their sensorial qualities: what does it feel to hold an object in your hand, what sound does the use of an object create. Offering feedback on the models, always relating them with the narratives, led to more nuanced versions of these mock-ups and took us to the construction of the objects as finished and reproducible products. The students concluded the workshop composing a narrative that describes the use of their object from the perspective of a particular character. This narrative communicated functional aspects of the objects: elements that somebody could not easily understand without directly engaging with them. The end of "Homing Objects" meant the reinterpretation of what home might mean and the beginning of the studio's final assignment: the building of full-scale domestic rooms, merging again through writing and language, that further questioned the notion of domesticity

Teaching Award
Gillian Shaffer Lutsko, University of Southern California

Gillian Shaffer is a Lecturer in Architecture at the University of Southern California, a designer and principal of the architecture studio, Studio Shaffer Lutsko, founded in 2020. She was also the 2022-23 Citizen Architect Fellow at USC. Studio Shaffer Lutsko has been recognized and supported by the National Endowment for the Arts, The Creative Europe Programme of the European Union, and Future Architecture Platform.

Shaffer's work centers around the question of how architecture should respond to the most pressing issues of our time: the ongoing climate crisis; broader understandings of individual and cultural identities; worsening economic inequity; and the societal and cultural impacts of new technologies on space and visual media. Prior to USC, she taught studios at UCLA Architecture & Urban Design, The University of San Diego, Princeton University, and Pratt Institute. Shaffer has worked in offices in New York, Berlin, Tokyo, and Boston where she led architecture and urban projects. Her work has been exhibited and published internationally, including the Venice Biennale, the Seoul International Biennale on Architecture and Urbanism, and several galleries in New York City.

Crafting a Collaborative Curriculum: The Design Build Initiative

Michael Hughes, American University of Sharjah
William Sarnecky, American University of Sharjah
Gregory Spaw, American University of Sharjah
Ammar Kalo, American University of Sharjah
Patrick Rhodes, American University of Sharjah
Kenneth Tracy, American University of Sharjah
Juan Roldán, American University of Sharjah
Marcus Farr, American University of Sharjah
George Newlands, American University of Sharjah
Camilo Cerro, American University of Sharjah
Jason Carlow, American University of Sharjah
Daniel Chavez, Scarab Design
Emily Baker, University of Arkansas
Matt Trimble, Scenic City Nomads

Located on the Arabian Penninsula the on-going Design Build Initiative (DBI) at the American University of Sharjah presents an alternative model of full-scale pedagogy that privileges a collective approach to hands-on education woven into all levels of the curriculum. As such, this submission is not for a single project, but rather an overarching faculty collaboration and institutional process designed to address shortcomings in the academic design-build model. The initiative features a diverse, evolving faculty collective working together within a supportive infrastructural framework designed to overcome the excessive stress associated with design-build in which a single faculty juggles responsibility for all aspects related to teaching, client engagement, logistics, accounting, construction supervision, and project delivery. Even the most experienced teachers suffer. Dan Rockhill notes that, "When I stagger away from these projects, I think 'There has got to be an easier way'." (Kraus, 2017).

The DBI experiment exemplifies an "easier way" to conduct full-scale pedagogy. Working from a collaborative, holistic perspective the program successfully resolved many of the "five issues and challenges… present, to varying degrees in all" design-build programs." (Canizaro, 2012) Collegial and administrative resistance, equipment and facilities, funding and quality of work have all been addressed to a great degree. The new organizational framework foregrounds a team-based approach, curricular integration, and fluid teaching assignments that eschew individual entitlement or ownership. The large pool of faculty allows for a platoon system that keeps everyone fresh while also ensuring that participants teach non-DBI courses thereby defusing internal politics. Stress still exists, but participating faculty now operate within a supportive network of empathetic colleagues.

To date twelve DBI faculty have led hands-on coursework. Projects have been recognized with three ACSA awards, three JAE publications, and nine AIA design awards. Notably, each of the three ACSA award-winning projects was led by a different professor.

Professional Horizons

Hans Herrmann, Mississippi State University
Abbey Franovich, Mississippi State University
Ashley Studdard-Hughes, Mississippi State University

Teaching in a rural context within a rural state is not uncommon; however, this situation makes for an unusual educational circumstance. Just as an aspiring chef born and raised in desert country might struggle to understand the flavors of seafood in their cooking, a student of architecture in that same environment, will struggle to understand the notion of a lush landscape or wooden structure in their design thinking. Many students embark on their educational journey with extremely limited perspective. While libraries, media, and the internet have expanded access to information, they cannot fully replicate the lived experience of different places and spaces. Nor is it possible for any educational simulation to achieve true experiential high-fidelity as it relates to professional practice. These challenges, compounded by obstacles some student's face due to their limited financial resources, race, ethnicity, or other limitation, are at the center of the initiative.

Professional Horizons is an ongoing, multi-platform educational initiative launched through a collaborative agreement between Mississippi State University (MSU) and the Design Leadership Foundation (DLF). The partnership was formed to generate models of engagement that counter, and work to shift, longstanding disparities of equity in the architecture, interior design, and landscape architecture professions. Mississippi State University has a strong record of promoting inclusion and equity, and the DLF, through professional association with members of the faculty, has invested in building new models for the preparation and encouragement of historically underrepresented students. The programs developed as part of this initiative are designed to bring awareness and provide opportunities to students who may not otherwise have had a clear view of achievable professional paths. From small materials and technology awards to semester long study away scholarships, our initiative targets the root causes behind the disparities seen in professional practice.

Balancing Growth & Livability Using Performance Metrics: A Solution To Housing Crisis In San Francisco
Rishabh Khaire, Thomas Jefferson University
Peng Du, Thomas Jefferson University

Cities all over the world are experiencing exponential growth in population. It can be argued in most of the cases that outdated and traditional zoning regulations, coupled with a lack of technological advancements in planning context-specific and adaptable urban scenarios, are the primary reasons why cities are failing to meet the growing needs of their populations. Rising densities with low supply of housing specifically affordable, lack of jobs opportunities and amenities within walkable distance has resulted in skyrocketing land and household prices within city cores. This has seen displacement of the middle and lower-income groups raising concerns of gentrification in cities.

The aim is to study existing urban framework and zoning policies and identify the limitations that have resulted in shortage in affordable housing supply, segregation, urban sprawl and in turn failing to accommodate the growing population in cities. To override traditional zoning and implement a performance-based zoning typology to see if it can be a solution to bringing in more affordable housing, diverse communities, restrict sprawl and improve the overall urban health in terms of mobility, sustainability, socio-economic improvement, etc. San Francisco is facing a housing crisis like most of the cities around the world. Traditional zoning and design are one of the primary reasons for limited supply and affordability challenges. The research presents performance-based zoning design as a flexible alternative and outlines its potential to mitigate housing crisis. Exploring housing policies, their impact on urban health and the viability of performance-based approach. The design is guided using inputs like floor area ratio (FAR), permissible heights, parcel coverage and analyzed using performance objectives starting with number of dwelling units, increase in households, accessible open space & economic viability. The research aims to offer innovative strategies that can potentially address housing crisis in San Francisco.

Interrupted Cities and Open Futures: Architectural Scenario Planning and the Case of Amaravati

Sony Devabhaktuni, Swarthmore College

The paper tells the story of the interrupted construction of a new state capital in southern India and the use of a design method -- architectural scenario planning (A-SP) – to envision its possible futures. Amaravati exemplifies how economic and political disruptions can turn a "city-from-scratch" into a "city that never was," part of the "phantom urbanism" that has created "ghost cities" around the world.1 Begun in 2016, construction stopped after three years, leaving infrastructures scattered across 217 km2 of appropriated land. Today, the site remains in legal limbo, with foundations, flooded pits and unoccupied concrete towers teeming with plant and animal life in an unplanned rewilding that has deprived more than 100,000 people of agricultural livelihoods.2 Scenario planning was conceived at Shell Oil in the 1960s and has since developed in diverse settings.3 At the method's heart is the articulation of multiple plausible scenarios dependent on carefully chosen parameters. These parameters are most often described and forecast using quantitative data, with the resulting scenarios taking the form of written "stories" sometimes shaped in consultation with diverse actors and back-cast to inform current day decisions.4   The notion of a scenario is not alien to architectural discourse or practice.5Competitions and CFPs both can promote diverse visions for a site. Nevertheless, competing schemes are rarely based on systematically derived, opposed assumptions or viewed outside the framework of an optimal solution. While there has been a peripheral engagement with scenario planning within architecture, teaching and practice continue to privilege the winning design rather than contingent possibilities.6   We re-deploy architecture's capacities beyond a traditional realm of services by using A-SP to envision potential futures for Amaravati — the site's tangle of uncertainties over a long time frame make it an excellent case to consider A-SP's potential.7 We adopt a method structured by a 2 x 2 planning matrix comprising the either/or variables of land-ownership and infrastructural build-out.8 This matrix produces four-scenarios for a 20-year time frame -- "Village Islands," "Networked Farming," "Suburban Satellites," and "Horizontal City" – each back-cast at 5 year intervals. Plans, sections and diagrams at multiple scales comprise visual narratives for each of the four scenarios, leveraging architecture's capacity for graphic description. This graphic aspect distinguishes A-SP from the written accounts and quantitative data that describe futures in traditional exercises.9 Although there continue to be developments with graphic spatial interfaces at the GIS and urban scale in recent scenario planning exercises, we argue that architecture's trans-scalar tools and material engagement allow it to more convincingly envision alternatives.10Research conducted since 2018 informs the A-SP exercise. This includes: close drawing of Amaravati's transformation from 2014 -- just before construction began -- to the present; the close reading of government reports, consultancy PowerPoints and public-facing web platforms; the review of social science literature and local English-language reporting; and photographic documentation completed in three trips since 2018. This broad engagement with place is a necessary prerequisite for any A-SP exercise and founds a design approach oriented toward the imaginative study and articulation of multiple, contingent futures.

Towards a Dialectic Object (after O.M. Ungers)

Martin Haettasch, University of Texas at Austin

One of German architect O.M. Ungers' lasting contributions to urbanism is the idea of the "dialectic city." Challenging the modernist concept of the city as singular plannable system, Ungers insists that instead, it exists as a balance of coinciding opposites (coincidentia oppositorum)[1], in which thesis and antithesis are suspended within a constellation of distinct layers and places. These layers – formally and ideologically discrete – only in sum define a city's pluralistic character. One possible outcome of this concept is the city of islands, famously explored in Ungers' 1977 "Green Archipelago" project. Disconnected from its antithetical neighbors, each thesis takes the shape of an urban island floating in a sea of x-urban formlessness, yet co-dependent in a federative system.   What is easily overlooked is that this model does not only rely on the dialectic condition between its ideal fragments, but equally between "island" and "sea". The neutral grid upon which the islands float acts as the great equalizer, a shared common ground of the urban enterprise as such. When this civic contract falls prey to privatization, unhindered growth, economic depression, or any combination thereof (as is arguably the case in many of today's urban environments), little is left to distinguish the islands from gated communities in a field of post-urban entropy.   How, under these circumstances, can the island itself become the guarantor of a pluralistic project in a territory no longer bound by a federative principle?   This question is at the heart of a speculative master plan for the decommissioned Berlin Tempelhof airport. In analogy to the dialectic city, the project envisions a singular, formally discrete intervention in the city with the capacity to negotiate differences within its confines – the complexities of the "dialectic city" condensed into what one might call a "dialectic object". Building on Tempelhof's varied histories, the project embraces the formal strength of the airfield' elliptical figure as a "container" to accommodate a variety of spatial theses. Weinbrenner's Karlsruhe meets Leonidov's Magnitogorsk – but unlike in Ungers' archipelago not as separate islands, but as a linear city folding back onto itself around a central park. Embedded in this layout are several dialectic relationships: First is the project as a megaform, an enclave in Berlin's fabric at the scale of the Tiergarten or the former "death strip" along the Wall. Second is the relationship between different housing types embedded in the elliptical ring, traditional urban blocks, Zeilenbau, point towers, or empty buildable lots, connected by a ring road and public amenities. And third is the relationship between this ring, and a series of public monuments including the existing terminal building. Half appendices, half anchors, they are neither fully integrated into the ring, nor completely independent, and provide points of orientation and connection to the city. The project is characterized by a tentative balance between formal completeness and fragmentation. While opposite poles coexist, they never dissolve into fragments but remain dedicated to a greater legible figural presence in the city.

[1] from Nicholas of Kues' De Docta Ignorantia

The Future of Green Infrastructure: Cultural Placemaking and Design Prototypes for Pedestrian and Bicycle Activities

Hyesun Jeong, University of Cincinnati
Brian Hammersley, Hammersley Architecture

What if underutilized spaces found in city neighborhoods transformed into an integrated network of places throughout the community, providing neighbors and visitors opportunities to socialize, learn, enjoy physical activities, share and make art?   This research-design project, sponsored by the American Institute of Architects' national Upjohn Initiative program, underpins the idea of adaptive reuse as sustainable place making that promotes walking and cycling and serves to foster social cohesion and exchange in urban communities through increased pedestrian activities (Jacobs, 1961). Over the past few decades, repurposing abandoned infrastructure into green spaces has been a successful model for sustainable development in many U.S. and global cities. Our initial case studies found that these reclaimed trails, such as the Katy Trail in Dallas and the 606 in Chicago had a significant economic impact on surrounding areas by stimulating new mixed use housing developments and increasing foot traffic to commercial businesses around trails (Krizek and Johnson, 2006; Jeong, 2023). However, our research also suggested that while these trails brought the economic benefits to several neighborhoods, it frequently drove out existing residents who had to relocate due to rapidly rising housing costs (Crompton, 2005). Many underserved communities still do not have walkable access to parks and other cultural amenities, further increasing disparities of health and social wellbeing of urban citizens.   Using Chicago's Humboldt Park, which is a predominantly Hispanic neighborhood, as a site, we propose a series of process and community- driven prototypes of public space converted from neglected urban spaces that could enhance cultural use of the existing parks and boulevards on foot and bicycle. These connective spaces will accommodate arts and cultural programs, social gathering, sports activities, and ecological urban landscape in response to proximate infrastructure, such as transit stations, parks, buildings, and bridges as strategies for cultural placemaking (Gehl et al., 2006; Markusen & Gadwa, 2010; Jeong, 2019). We seek to make our prototypes as a collection of art, architecture, and planning as "flexible and feasible scenarios" to be replicable across multiple neighborhoods and cities and to be realizable through community efforts in partnership with public and private stakeholders.

Water, Water Everywhere: Water challenges in New Orleans and the possibilities of distributed infrastructures

Sean Fowler, Tulane University

New Orleans faces water-based challenges from all directions. Sea level rise and Mississippi River flooding threaten to overwhelm the Post-Katrina levee system. The city is dependent on the Mississippi River for drinking water: droughts, saltwater intrusion, and chemical byproducts and PFAS from "Cancer Alley" threaten this supply. Stormwater is managed with century-old pumps requiring huge amounts of power, maintenance, and infrastructure. Entire neighborhoods are subsiding from groundwater removal. Fixed and single-purpose infrastructures have divided the urban fabric of New Orleans. The benefits of these infrastructures are unequally distributed across the city and are insufficient to manage current challenges. The levee, stormwater management, and water treatment systems are unable to address the uncertain scope and scale of future challenges worsened by climate change. Attempts to retrofit current infrastructures for these future challenges threaten to repeat century-old mistakes of path dependence, which led to current conditions. Multi-purpose, distributed infrastructures can effectively mitigate many of these challenges at the neighborhood and superblock scale. This provides the opportunity to redress historic inequitable treatment of neighborhoods across New Orleans while addressing the most impacted areas of the city. This research project demonstrates the possibility to manage stormwater and flooding, reduce the power use and maintenance costs of the pump system, and halt or reverse subsidence by intervening in the existing street right-of-way. This project can reduce the demand on legacy fixed infrastructures by converting car-centric streets into performant, multi-purpose spaces. These streetscapes can also provide green and ecological spaces which filter runoff and reduce urban heat islands, create new "front yards" within dense residential neighborhoods, and reclaim other urban spaces for public use. This distributed stormwater management can also be extended to provide a potential future source for treatable drinking water separate from the water level and pollution impacting the Mississippi River.

DESIGN: BUILDING EQUITY THROUGH DESIGN

Saturday, March 16, 2024, 9:00am-10:30am

THIS RESEARCH PRESENTATION IS NO LONGER BEING PRESENTED

This Presentation has been removed and will not be presented at the conference.

Critical-Pathways
Suzanne Lettieri, Cornell University

Critical Pathways is an ongoing collection of projects aimed at expanding methods of early-learning engagement through built work, paying particular attention to how design experiences can have large-scale impacts on more equitable pathways to higher education and develop a deeper understanding of the built environment. The broader intent of this work is to introduce underrepresented and marginalized high school students to architectural design as a viable path to post-secondary education. Importantly, the work also supports architectural literacy in secondary education, regardless of one's decision to pursue the discipline.

Psychoanalytic Understanding of Unsaturated Questions and the Unsaturated Field in the Design Process

Elizabeth Danze, University of Texas at Austin

In architecture, as in many other disciplines, a teaching or mentoring relationship is based on one person being devoted to the growth in the other. By looking at the discipline of psychoanalysis and the psychoanalytic dyad – the relationship between psychoanalyst and analysand– we are better able to understand how particular aspects of the teaching methods and the working relationship between student and teacher might be enriched. The dialogue and exchange between analyst and analysand is a journey of discovery aimed at increasing self-awareness and acquiring the skills and ability to become autonomously self-aware. The analogies between this relational model and the quest to find the best methods to guide the emerging designer hold much potential. This paper looks at the psychoanalytic concept of unsaturated questions and the unsaturated field and how they inform the design studio process and working alignment between student and instructor. In his book, Creating a Psychoanalytic Mind, Fred Busch describes the unsaturated question as an invitation by the analyst for the analysand to reflect and imagine rather than seek a definitive answer. It's an attempt to bring new connections to the patient's mind, without suggesting any direction she should take - neither stating that something is true nor validating its correctness. The analyst speculates with the patient as to whether both can observe the same phenomena, allowing the patient to openly muse wherever her mind takes her. Analogously, in the design studio, the instructor's unsaturated question fosters a designer's mind, inquiring but also delaying certainty, while relying on the student to find the answers from within, rather than from the instructor. This approach expands on existing methods of teaching, learning, and mentoring and emphasizes the development of each student's unique and individual creative approach to architectural design.   By looking at analytic theorists and clinicians, we might better understand how we can help our students expand their own unsaturated design questions and work effectively in an unsaturated field-- the working dynamic created between the student and teacher. By looking at psychoanalytic field theorists, we see how they advocate in different ways for expanding the analysand's thinking, dreaming, and feeling. In turn, we see how to expand the capacity for these and self-observation via an appreciation for process knowledge in our students. In this psychoanalytic technique, the therapist must wait for new ideas to emerge. It is essential that the analyst (or teacher) watch, listen, wait, and not be seduced into "working too hard" for, or in lieu of, the patient (or student) doing this herself. Relatedly, an interpretation must be made at the right time, when it is most able to heard, take in, and metabolized.   Definitive, highly saturated questing and interpretations are more likely to close off thinking and do not aid in the plasticity of thinking. By looking at unsaturated questions and the unsaturated field within psychoanalysis, we are offered a model for interactions with emerging designers to equip them to think analytically and creatively and seek their unique and authentic voice.

SOCIETY + COMMUNITY: HOUSING: COMMUNITY AND COLLECTIVITY

Saturday, March 16, 2024, 9:00am-10:30am

Disrupting the Norm - Envisioning Community using Social Solidarity Economic Principles

Kate O'Connor, Ferris State University
Makenna Karst, University of Michigan

The community of Idlewild, located in Yates Township, Michigan, possesses a significant history as the largest historic African American resort community established during the Jim Crow Era. Established in 1912, it thrived for more than fifty years but declined with the passing of the Civil Rights Act in 1964. However, Idlewild has begun to revitalize, with new full-time residents seeking work-life balance in a rural context and, most importantly, residency in a safe community. However, Idlewild was originally designated for seasonal residents, resulting in a new set of needs for community sustainment.   A special focus on research that engages with community visioning to develop planning that realigns community, township, and county goals for Idlewild is a significant driver in this exercise. The use of community visioning will be coupled with the township master planning process with focus on sustainability; the implementation of social solidarity economics, as well as open book management, will solidify the continued success of the community in the spirit of "co-opetition". The application of these theories and their effect on the sustainability of Idlewild will be of particular interest. In addition to the environment, sustainability will include concern for people and economy to develop a balanced community structure.   Social solidarity economic principles refer to a set of values and practices aimed at promoting economic systems that prioritize cooperation, social justice, and sustainability. It is an alternative model to the mainstream capitalist system and seeks to address the inequalities and environmental challenges created by traditional market economies. The principles of solidarity economy emphasize the well-being of individuals and communities over profit maximization. Key Principles that will be addressed in this paper are: Solidarity and Cooperation Social Justice and Equity Democratic Governance Sustainable Development Localization and Autonomy Diverse Economic Forms Ethical Consumption Education and Awareness   A critical factor in the planning process is preserving historical community values while not stifling progress that will allow for a continued longevity. Embracing the African American heritage of Idlewild makes this instance of cooperative community living a unique example, amplified by its resort identity. Extensive literature review, community engagement, and active group communication will serve as the basis for planning. The strategic conversation of the Idlewild community members will be formulated through the lens of social solidarity economic principles and community theory, leading to documentation of solutions for the future of Idlewild. The aspiration for this process is to create a successful case study for other rural communities to begin planning and applying cooperative community modeling.

Making Space for Community - Learning from Collective Living as a Basis for Designing Policy

Antje Steinmuller, California College of the Arts
Neeraj Bhatia, California College of the Arts

Compounding pressures on urban land have revealed the structural inequities in housing access that have forced many to live in precarious conditions. San Franciscans today are starved for more affordable housing that enable alternative types of families while providing forms of care, community, and support. New housing typologies that common domestic space—communes, co-living, cooperatives, amongst others—have built on historic California experiments while more precisely reflecting contemporary values.

While living together provides such opportunities, the typology of "Group Housing" (as defined by the San Francisco Planning Code) is vulnerable to exploitation by developers. Through reducing the amount of shared amenities, developers have maximized rentable space while creating little room for community. Making Space for Community offers a path for architectural design-research to be used as a catalyst for new policy that more equitably distributes resources. The project is a collaboration between the authors and grassroots intentional communities—learning from lived experience how to successfully shape a domestic commons. Simultaneously, the authors have collaborated with the Planning Department, using this ethnographically informed knowledge to design new Group Housing legislation.

Making Space for Community analyzes over forty contemporary collective living projects, revealing how these often invisible domestic typologies leverage space, resources, and labor to shape meaningful social groups. The case studies are analyzed through three lenses (i) Hardware, or physical spatial arrangements (ii) Software, or mechanisms of sharing; and (iii) Orgware, which includes governance and labor protocols. This shaped a whitepaper report that guided new Group Housing legislation in San Francisco — ensuring shared spaces that foster community. This unique approach foregrounds the agency of architects in mediating between the lived experience of communities and institutional protocols. Because San Francisco's planning policy has often served as a model for other municipalities, this work provides a template for how more diverse voices can inform policy.

The Beans- microenvironment for the housing insecured students
Marta Nowak, The Ohio State University

The growing housing insecurity in major American cities in recent years has become increasingly more visible across university campuses. The increasing cost of housing and the limited availability of affordable options on or near campus has forced many students to seek housing far away from campus. Student commuters and "super-commuters," those who live off campus and commute more than 90 minutes, are among one of the largest and most diverse student groups that continues to grow. According to a recent study, students in this group are also especially prone to experience housing insecurity (43%) and homelessness (15%). Super commuter students typically organize their daily and weekly schedules around their lengthy commutes by car or public transportation, often having to sleep and rest in their cars in parking garages or in the libraries sometimes overnight to manage the time, distance, or cost of living and travel.   This paper/project examines the problem of housing insecurity among commuter students in XX city, and discusses the use of specially designed and fabricated mobile micro-environments called "Beans" as a provisional solution. The paper describes the community-informed research and design as well as construction and deployment of fifteen BEAN prototypes across a campus, and finally investigates their impact on the student body. The project development involved a close collaboration between student commuter groups through a series of iterative and feedback-based workshops to determine: a) student behavior in pods (activities, duration of sleeping, studying etc), b) programming needs (power, storage, light etc), c) health and wellness needs (cleaning, maintenance, COVID prevention) and d) psychological needs (safety, security and access). The design and development process included interviews with students, back and forth feedback from focus groups as well as physical body testing in order to accommodate the most equitable and accessible solution for various body types (from a five percentile female to a football player). As a result of this four-year initiative, BEANS and new commuter spaces were launched in different parts of the campus.   Conceived as a micro-environment for studying and sleeping, each BEAN a) derives it shape from multiple human activities taken place in the pods, b) is equipped with adjustable lighting systems, power outlet and personal storage, c) uses materials for easy cleaning, COVID prevention, ventilation and fire safety, d) and finally provides removable a privacy screen to allow for privacy and safety while sleeping. The commuter hub that houses the BEANS offers the student community a secure gathering place, accessible 24-hours a day, with additional spaces for both focus and collaborative work, as well as continuous access to basic amenities such as bathrooms, showers, and a kitchenette. This project, therefore, positions itself as one of many possible low-cost, temporary solutions that can address student housing insecurity and access to education among student commuters while more stable and permanent affordable housing can be provided.

THIS PRESENTATION HAS BEEN MOVED TO THURSDAY, MARCH 14, 2024 IN SOCIETY + COMMUNITY: COMMUNITY INFRASTRUCTURES.

Collective Culture and the Cooperative Housing Model in Detroit

Thomas Provost, University of Detroit Mercy
Joshua Budiongan, University of Detroit Mercy

Like most of its peers, Detroit's history is filled with standard plays: large-scale urban renewal, highway expansion, redlining, racial restrictive covenants, and widespread single-family zoning. There is perhaps no greater compounding injustice in Detroit than the construction of I-375 that occurred in the areas known as Black Bottom and Paradise Valley. Once home to over 140,000 people, the immediate area is now a major 8-lane highway interchange with two distinct tales of residential redevelopment on either side. Sadly, neither of these developments countered the elimination of generational wealth, and given that home ownership is the greatest source of wealth for Detroit's Black population, there is undoubtedly an opportunity to close the wealth gap going forward. With a clear strategy to support the expansion of home ownership, we might finally see movement toward housing equity.   Detroit's biggest landowner is coincidentally the city's very own Detroit Land Bank Authority (DLBA), a public-benefit nonprofit corporation that oversees approximately 75,000 parcels of property. Acknowledging the vast stock of open land currently held by the DLBA, we propose to enable various scales of cooperative housing structures by using decommodified and rezoned clusters of parcels for the purpose of enacting a large-scale housing strategy. Working as the activist arm of the DLBA, the Office for Cooperative Housing addresses reparations, housing action, and implementing a new zoning policy known as R-0. The Office pursues strategies for widening access to housing in urban areas, uncovering opportunities for collective action within existing systems, and shifting cultural attitudes toward collective space and cooperative living—leading toward greater equity outcomes in a city still dealing with the trickle-down of social, political, and economic crises. As part one in a larger research trajectory focusing on implementing cooperative housing strategies throughout the United States, we visualize the inner-workings of the Detroit office as various spaces and configurations that allow residents to speak, listen, discuss, shout, organize, debate, and contribute to their very own housing future.

Backyard Building: Rethinking the Single-Family Neighborhoods of New Orleans Through Prefabricated Accessory Dwelling Units + Shaping Public Policy In Croton-On-Hudson, NY.

Ethan Samuel Lewis, Hart Howerton & Tulane University

The first portion of this presentation is a thesis comprising a real estate development investigation and architectural proposal. The thesis focuses on revitalizing stagnating single-family neighborhoods in New Orleans through legalizing accessory dwelling units (ADUs). The presentation examines existing precedents and research in Los Angeles, identifying weaknesses and proposing alternative approaches. It also includes a survey conducted in Uptown, a New Orleans neighborhood with existing ADU stock, along with a review of the survey results. The thesis reaches its culmination in an exploration of a proposed prefabricated ADU system implemented in the Gentilly neighborhood. This system aims to promote sustainable living, facilitate wealth generation, and enhance neighborhood resiliency across multiple scales, including zoning, block, lot, and domestic levels. The project emphasizes the significant potential of underutilized spaces on homeowners' lots to drive positive change for homeowners and the broader community. The second section of the presentation explores post-graduation applications of the thesis research in shaping public policy in Croton-on-Hudson by pursuing the legalization of detached ADUs. The presentation concludes by highlighting the strong synergies that can be achieved by addressing the national need for affordable housing, implementing asynchronous scattered-site real estate development, and employing intelligent city planning practices.

HISTORY, THEORY, CRITICISM: HISTORICAL LANDSCAPES

Saturday, March 16, 2024, 9:00am-10:30am

The Region as Model: The Tennessee Valley Authority, 1933-1953

Micah Rutenberg, University of Tennessee-Knoxville

The Tennessee Valley Authority (TVA) introduced a new regional category defined by the Tennessee River watershed. Much has been made, rightfully, of the management practices and administrative mechanisms the TVA employed to gather, organize, and structure the kinds of information necessary to support an objective, scientific approach to building the region. However, less understood is how the TVA became not just a new type of region, but a repeatable model. The Tennessee Valley as a model was predicated on delimiting environmental and geographic – rather than political – boundaries. Such boundaries introduced novel challenges to the notion of development as they were more fluid and open to interpretation and required immediate, robust mechanisms for generating data on a large scale to counteract these ambiguities. This paper addresses how the model was planned and conveyed through representational mechanisms of quantification: First, the TVA model in relation to planning as a discipline, then the land as a model, and finally, how the model was conveyed in cartographic space. These mechanisms were purportedly objective, but also fraught with internal contradictions when confronted with variabilities on the ground. In particular, cultural narratives and images used by to make the TVA's goals of technological, economic, and environmental transformation both legible and palatable to local and national audiences presented a dialectical juxtaposition with the TVA's dams and infrastructure that was never fully resolved. Lastly, I will conclude with a discussion of how the TVA model played a role in both domestic and global forms of statecraft.

Sistan Mapped; A History of Cartographic Representations of a Borderland Region

Samira Sarabandikachyani, University of Cincinnati

In the late 19th century Qajar Dynasty, British imperialism in Iran changed the essence of the Sistan region by imposing a new border line between Iran and Afghanistan. The British redefined territorial boundaries, all influenced by a "colonial gaze"— seeing the region as a miserable space, awaiting reclamation by supposedly more civilized cultures. This paper takes a qualitative, interpretive-historical approach along with visual analysis to examine five historical maps of Sistan as primary sources. This study examines how the border imposition was artificially created through mapping and cartographic representations, how the British showed various moments of confrontation and displacement of regional identities, and how Persians resisted to save their territoriality and reverse the colonial gaze. Initially, a 10th-century world map crafted by Ibn Hawqal indicates the historical significance of Sistan in both Persian culture and the Islamic world. Then, Dhulfaqar Kirmani's 1871-1873 map invokes the "mythical unity" of Sistan, drawing inspiration from Abu'l Qasim Firdausi's Shahnameh (Book of Kings) to assert Iran's claim. Frederic Goldsmid's 1872 map, reflecting British interests, serves as an "ideological construct" to assert colonial control. Mirza Mohammad-Reza Tabrizi's map as a "cultural construct" blends indigenous territoriality with British influence, show-casing a complex hybrid. Finally, Henry McMahon's 1905 map highlights the interplay between meanings and power while revealing the impact of local resistance on Sistan's cartographic representation. These interpretations demonstrate that maps are not disembodied representations or neutral constructs. Sistan is depicted on these maps as a "region interrupted" by Eurocentric perspectives, a "region united" by Persian maps, and a "region in-between" when the British maintained their political order and relied on the locals to resist the imposed border, resulting in an ongoing "place of conflict." Overall, this paper unveils how these maps transformed Sistan into an "in-between" region, striated by delineated boundaries, disrupting its seamless territorial perception.

Jean Gebser's Integral Consciousness and Modern Architecture
Liyang Ding, Marywood University

Jean Gebser (1905-1973), a prominent German-Swiss philosopher, introduced a transformative framework that aimed to elucidate human consciousness and cultural structure, laying the foundation for a new approach to interpreting the development of architecture. This paper delves into the intersection of Gebser's integral consciousness theory and modern architecture, with a particular focus on the work of German architect Hans Scharoun as an illustrative example. Gebser's integral consciousness presents a groundbreaking framework that challenges the prevailing linear understanding of time and space. His seminal work, The Ever-present Origin, offers insights into the forms and mutations of human consciousness from its primordial beginning to the "present." Gebser proposes that humanity evolves through different modes of consciousness, with each mode building upon and transcending the previous one. He identifies five primary structures of consciousness: archaic, magic, mythical, mental, and integral. The integral structure represents a leap beyond the limitations of linear thinking, embracing a holistic and non-linear understanding of reality. Significantly, Gebser correlates these structures with forms of visual expression, emphasizing people's awareness of their inseparable bond to the consciousness of time and space.[1] According to Gebser, a key aspect of understanding human perception of time and space is the notion of perspective. He believes that the discovery and application of perspective indicate people's "consequent coming to awareness of space."[2] Therefore, based on the absence or presence of perspective, Gebser recognizes three "epochs" in human history: "unperspectival," "perspectival," and "aperspectival," corresponding to the era from the inception of human civilization to the Renaissance, from the Renaissance to the early twentieth century, and from the twentieth century onward, respectively. Although Gebser utilized architectural expression to support his argument, the relationship between Gebser's theory and modern architecture remains largely neglected.[3] This paper thus aims to shed light on Gebser's thinking and its relationship to Scharoun, arguing that Gebser's integral consciousness provided the German architect with a theoretical framework to reconcile the fragmentation of modern life, integrating them in a harmonious whole. The paper seeks to show that, in Gebser's view, the development of modern architecture during the early decades of the twentieth century embraced a new architectural language and design approach that resonated with the evolving human consciousness. Notable modern architects, such as Frank Lloyd Wright, Walter Gropius, and particularly Scharoun, emphasized the interconnection of spaces, the blurring of inside-outside boundaries, and the liberation from linear perspectival spatial construction. Furthermore, the paper explores the profound affinity between Gebser's concept of time as a multi-dimensional phenomenon and the temporal aspects of Scharoun's architecture. In Scharoun's theater and concert hall projects, the linear progression of time was challenged, and the architect began to experiment with concepts such as "simultaneity" and "aperspectivity." Structures were designed to accommodate the changing needs of individuals, programs, and society, allowing for flexibility and adaptation, while promoting aperspectival consciousness. Time was no longer seen as a measurable chronological dimension, but rather as a fluid entity interacting with space, creating a dynamic and responsive built environment, or in Gebser's terms, a "ever-present" sensibility.

The Decreative Impulse: The Last Page of Learning from Las Vegas
Margarita McGrath, Virginia Tech

This paper delves into the 'decreative impulse' briefly mentioned on the last page of Learning from Las Vegas, unraveling its roots within the disruption of modernism initiated by Venturi and Scott Brown and revitalizing decreation's disruptive capacity. Tracing a chain of evidence through archives and intellectual connections, the author traces the source of the reference to Venturi, connecting his exposure to New Criticism and teachings of Jean Labatut back to Simone Weil's theological decreation, transformed by Wallace Stevens. Shifting from historical inquiry to theoretical projection, the author proposes Weil's call to undo ego as a potential response to challenges to the profession posed by AI integration, climate change, and social justice. While Venturi gently pushed conventions, truly 'Decreationist architecture' needs more radical undoing of the profession. This is embodied in contemporary examples such as new Japanese metabolic urbanism and experimental preservation. These resonate with Weil's concept of generative restraint. The unexpected discovery, in a study sparked by '60s disruptors via a book on the Las Vegas strip, is not more neon and spectacle in the desert, but the ascetic ideas of a French mystic – underscoring the potency of interdisciplinary disruptions across criticism, design and religion. Weil's "less" is no longer "a bore" but rather a door opening new architectural possibilities.

Bridging the Gap: Sustainable Thinking in Architectural Education
Mili Kyropoulou, University of Houston

In the evolving landscape of architectural education, the imperative to cultivate sustainable design competence has become increasingly prominent. While the term "sustainability" has become ubiquitous in design studio briefs, there remains a significant gap in providing students with clear definitions and the means to integrate sustainable principles into their design projects successfully. To effectively address this issue in architectural education, it is essential to develop methodologies that are adaptive to the changing climatic challenges and rapid technological advancements, all while effectively navigating the persistent perceived dichotomies that dominate architectural education and the profession, such as the discourse between creativity and technicality or analytical and synthetical minds. Architectural programs are positioned to respond to these challenges and bridge the divides by persisting in the deep learning of fundamental principles and theories and by creatively incorporating sustainable environmental design into traditional design studios. This paper explores the current state of sustainable environmental design within architectural education and underscores the vital need to effectively equip students with the necessary tools and methods to consciously and meaningfully integrate sustainability into their designs. It discusses two modules that emerged from the restructuring and testing of the environmental technology sequence within the curriculum of a graduate architecture program. One focuses on studying existing buildings through a structured post-occupancy evaluation project, leveraging historical contexts, and the other is centered on integrating computational simulation tools into the design process, harnessing contemporary technologies. Both modules emphasize immersive, experiential learning, nurturing process-based mindsets that promote flexibility and adaptability to the rapid changes the architectural profession faces, and empowering students with analytical skills to navigate the complexities of sustainable design. Students are encouraged to cultivate critical thinking skills and embrace interdisciplinary perspectives by employing active learning strategies, emphasizing learning-by-doing approaches, and promoting student-led initiatives, ultimately prioritizing design processes over singular outcomes.

Down to Earth: Inclusive, Land-Based Pedagogy Through the Geopoetics of Earthen Construction

Jeremy Magner, University of Tennessee-Knoxville

In resistance to the geopolitical logic of accumulation and dispossession, we may find new methods for teaching and building through speculative geopoetics as "a regime for producing subjects and negotiating properties of belonging" (Yousoff 13). Thus was born the intention for a seminar that combined experiential, action-oriented pedagogy with the specifics of place in an effort to offer students a new way to find meaning and belonging through spirited collaboration and social acts of craft. Bringing together students from radically diverse backgrounds (representing 5 countries, 4 continents) and abilities, this seminar began with a romantic notion of Appalachian red clay soils. These vivid hues are indicative of a high clay content which, in addition to aesthetic intensity, affect the stability of subsoil in our wet climate presenting challenges to structures. However, this clay content is the most valuable component of earthen construction and represents the potential of a radically abundant, durable, and evocative local resource. East Tennessee offers a unique set of opportunities and challenges for earthen construction which to date have been under-explored. From this basic premise emerged something much more spectacular. Beginning with something as simple yet fundamental as digging in the dirt inspired an interdisciplinary array of inquiry and production in which a diverse set of students found individual meaning as well as collective expression. Following an initial research and reporting phase which grounded the geopoetic history of earthen construction across climate zones and historical eras, cohorts of students formed organically to investigate both the pragmatic (soil analysis, mixture composition, tooling, compression testing) and generative (drawing with soil, modeling with soil) immanence of local soils (Last 56). Students gained expertise in a timeless form of construction while exploring areas for innovation (3d printed CEB form inserts, expanded clay block). The work culminated in a 1/2-ton full scale mock-up which synthesized the techniques and qualities developed throughout the semester into a hybrid assembly of varying component densities while exploring opportunities for architectural detail. The immanent geopoetic agency of East Tennessee soils deeply connected students with place yet paradoxically transcended borders and cultures, shrinking the world while expanding the earth, engendering a pluralism that entangles otherwise disparate cultures and ecologies without universalizing. Most importantly an inclusive model emerged, bonding students together over hopeful, joyful acts of labor in deep attunement to lineages of terrestrial specificity (Latour 88).

Teaching Award
Robert Williams, University of Massachusetts Amherst

Rob Williams is a practicing architect and Assistant Professor in the Department of Architecture at UMass Amherst. His practice-based research has been recognized through numerous peer-reviewed conference presentations and journal publications. He holds degrees from Cornell University (B.A. 2005, Magna Cum Laude) and The Rhode Island School of Design (M.Arch 2020 with honors) where he received the American Institute of Architects Henry Adams Gold Medal and the Henry D. Fernandez Award for Excellence in History and Theory.

Professor Williams' professional practice, research, and teaching center on climate change mitigation through decarbonization in the residential design and construction sector. Professionally, he has designed a series of award-winning high-performance single family and multifamily residential buildings that achieve substantial reductions in energy use and carbon impact, including multiple passive house projects. Professor Williams' research expands on his professional expertise through the lens of pragmatic sustainability, an approach that prioritizes holistic carbon impact as the critical tool for assessing environmental impact and sustainability in building design. This includes, for example, analyses of the trade-offs between embodied and operational carbon in passive house residential buildings, design of truly net-zero carbon accessory dwelling units, and assessments of the carbon impacts of building with recycled shipping containers. At UMass, Professor Williams has introduced significant innovations in the department's approach to teaching building technology and design including redesigning the introductory building technology course, collaborating on revisions to the comprehensive studio sequence, and the introduction of sustainable design principles into studio course work. He is also a co-founder of the UMass DesignBuild program, a new interdisciplinary initiative where students collaborate to design and build low-energy and low-carbon homes for a local affordable housing provider.

Teaching
Lukas Pauer, University of Toronto

Lukas Pauer is a licensed architect, urbanist, historian, educator, and the Founding Director of the Vertical Geopolitics Lab, an investigative practice and think-tank at the intersections of architecture, geography, politology, and media, dedicated to exposing intangible systems and hidden agendas within the built environment. At the University of Toronto (UofT), Lukas is an Assistant Professor of Architecture, Inaugural 2022-2024 Emerging Architect Fellow. There, his contribution at disciplinary intersections is reflected in his engagements as a Faculty Affiliate in Urban Studies at the UofT A&S SofC as well as a Faculty Affiliate in Global Affairs and Public Policy at the UofT Munk CERES. From the Architectural Association in London, he holds a PhD AD on political imaginaries in architectural and urban design history with a focus on how imperial-colonial expansion has been performed architecturally throughout history. Pauer holds an MAUD from Harvard University and an MSc Arch from ETH Zürich. Among widespread international recognition, he has been selected as an Ambassadorial Scholar by the Rotary Foundation, a Global Shaper by the World Economic Forum, and an Emerging Leader by the European Forum Alpbach — leadership programs committed to change-making impact within local communities.

In the industry, Pauer has extensive technical experience in construction gained at globally renowned architectural and landscape architectural design practices including Herzog & de Meuron Architekten and LCLA Office. In the academy, Pauer is a Fellow of the British Higher Education Academy. Most notably in the realm of international teaching awards, he has been recognized for having devised, co-ordinated, conducted, and assessed courses and workshops including thesis supervision and examination at leading institutions in Europe, the Americas, and Oceania. He has spoken publicly at organizations such as the World Bank Group, and has curated and convened public programs at venues including the Venice Architecture Biennale.

URBANISM: URBAN ECOLOGY & COMMUNITY

Saturday, March 16, 2024, 11:00am-12:30pm

Kiosk K67: Restoring Communities
Dijana Handanovic, University of Houston

Designed in Yugoslavia in 1966 by architect Saša Mächtig, the Kiosk K67 represented the spirit of a unified Yugoslavia. The 8'x8'x8' polyfiber K67 module embodied an aspirational moment in the Yugoslav narrative of nation-building based on brotherhood and unity. Kiosk K67 was more than a newspaper stand, a flower shop, a post office, or ticketing booth. It was a stage - a place for stories to be exchanged - a place of daily rituals. It transcends borders between architecture, industrial design, and urban planning. Its bright colors, sleek and shiny surface, and rounded corners not only point to the time of pop futurism but also make the kiosk an unavoidable moment of interaction - a meeting point.   The K67 emerged during a time of national prosperity when Yugoslavia strove to achieve a better future for its citizens and when the role of architecture, across scales from object to urbanism, was to represent collective pride and solidarity. During a time when architecture was forceful, consistent, and static, the Kiosk K67 was adaptable, flexible, limitless, nomadic, and playful. The Kiosk K67, not merely an object but a system for urban imagination, embodies the marriage of architecture and urban design. The exact number of Kiosks K67s that remain out of the 7,500 pieces produced is unknown, but those that do continue to bring people together and create social networks. Many were destroyed during the Yugoslav war, prompted by the dissolution of Yugoslavia, and others left to decay over time.   The Kiosk K67 Restoration Project aims to bring back the iconic Yugoslavian Kiosk K67 and reintroduce it into the urban landscape, not just in former Yugoslav countries but around the world. The project recognizes the kiosk as a successful temporary urban intervention that creates and harbors community.   In 2020, driven by nostalgia, design significance, and the kiosk's ability to activate streets and foster human connection, the journey to finding and restoring a Kiosk K67 began. Decayed floors, holes, cracks and a leaking roof revealed the kiosk's deteriorated state. The process of restoration also uncovered the kiosk as a place of interaction - not just a "how to do this" discovery but a discovery of the kiosk's role in human connection. To date, a fully restored Kiosk K67 has been transported to the United States, installed in an urban setting, and has once again demonstrated its ability to foster community. The project's ultimate goal is to reintroduce them to the urban landscapes following displaced Yugoslavians - in former Yugoslav countries and around the world.   While the Kiosk K67 continues its legacy as a design icon around the world, in the ethnically diverse region of former Yugoslavia, it is a beacon of hope and a reminder of a better collective time. As an undeniable keeper of history, a physical solvent of the invisible boundary between people and the power of coexistence, the kiosk does not belong to architecture, urban design, nor industrial design but to the communities that it fosters.

The Seventh Stopping Place: Climate Migration and the Future of the Great Lakes
Christian Nakarado, Wesleyan University

In the coming decades, the Great Lakes region is projected to become one of the most desirable places to live in North America. While the devastating ecological effects of climate change will make arid, tropical, and coastal zones uninhabitable, the cities by the lakes are considered by some to be climate havens—areas which are expected to remain relatively comfortable. They are far enough north to maintain tolerable summer temperatures, are surrounded by the resources of abundant boreal forests, and will be insulated from the worst effects of drought by a five-lake reserve that contains 20% of the world's surface fresh water. The arrival of climate migrants will carry significant pressure to accommodate more people, as well as a possibility of land dispossession and displacement for the many indigenous communities that call the area home. If the Great Lakes can expect many millions of new arrivals in this century, what could this mean for development? Are there other ways to imagine the region's future beyond the extractive infrastructure and carbon-intensive architecture that are typically thought to be prerequisites for urbanization? This paper proposes that the lighter methods of construction practiced by native people in the area for millennia are ideal alternatives. For centuries prior to colonization and industrialization, the Great Lakes region had been home to a thriving Anishinaabe culture, which continues to build in ways better suited to the environment than conventional modernism. I argue that by following the models of ephemeral dwelling and impermanent urbanism that characterized indigenous practices of land use here for thousands of years, a more ecologically responsible and ethical model for development in the region might be possible.

Infrastructure, America's De Facto Urban Design

Anya Domlesky, SWA Group

Infrastructure has functioned as America's de facto urban design plan for centuries. Specifically, transportation infrastructure networks, although much can be said of other infrastructures of water management, energy, communications, and solid waste. But the corridors that make up port, river, rail, and road systems have proven extremely durable as organizing features, even as they obsolesce as new, faster or cheaper forms of transportation are built out. Seaports were once the dominant hubs of merchant activity and passenger transportation. Then inland rivers began to be exploited and transformed to carry goods and raw materials in and out of the interior. The introduction and implementation of rail transportation transformed landlocked areas in the West. And most recently, the invention of the automobile, native to the US, ultimately came to dominate the American landscape through highly accessible, high speed routes and roads.   As transportation infrastructures like canals are superseded entirely, and others like ports radically shift to different regimes—from breakbulk to tankers to containerization—physical space is opened up. These spaces are highly varied in size, shape, location in section, and don't all become available at one time. However, with a long view of urban processes, these spaces have advantages not held by other sites that have been decommissioned, such as a factories. They are already part of larger linear networks, and due to efficiency, usually near urban centers. This allows these corridors with their attendant "spurs" (storage) and "burrs" (points) to be co-opted or co-used for active/alternative transportation, climate change adaptation measures, accessible public space, and recreation within already dense metro areas.   The current federal and societal attention to infrastructure in a broad sense post-pandemic, as a term that can encompass care, education, and other social aspects, as well as one that can still refer to traditional "hard" infrastructure, is novel. With this attention comes a reassessment of the large amounts of funding the federal government has put into highways, bridges, and tunnels, traditionally the purview of engineers. This opens up a wider realm of agency for urban designers, architects, planners, and landscape architects to enter into this space. Questions of carbon, sustainability, livability, attractiveness, and social performance are forefront, rather than efficiency exclusively. Importantly, federal dollars are still being appropriated for the adaptation and transformation of infrastructure, rather than capital investments being left to private developers or local governments.   Our practice-based research project focuses on infrastructure as a unique inflection point of both urban design and urban process, with a significant opportunity to deviate from business as usual. The larger project contains a primer on how these four types of transportation corridors work, what their components are, their dimensions, their uses and disuse, their total extents, and how we might think about port, river, rail, and road infrastructure together as a network of corridors with "burrs and spurs." The work is articulated through synthetic drawing, component catalogs, GIS data analysis, 30 project case studies, as well as incorporating technical standards and previous scholarship from environmental history, urban design, and American history.

IN ACTION: Urban Design Pedagogy for Co-Production
Mona El Khafif, University of Virginia

How are we learning to collaborate and co-design with community stakeholders when traditional real-world engagement processes are vulnerable long-term relationships that are not in sync with the requirements of semester schedules and institutional restrictions? What are the emerging techniques and pedagogical mechanisms that we need to test and explore to allow for a learning environment that facilitates for urban design in action? Working with the Trust of Public Land (TPL) and a fictional Community School Yard project in East Cleveland, the presented research is based on the long legacy of TPL's Playgrounds Program that pioneered a new model for environmental leadership and community stewardship. Since 1996, the program transformed over 214 formerly paved schoolyards into green community schoolyards in NYC alone and developed a unique participatory design process involving students and community members serving today as a methodological roadmap that is implemented across the country pointing at a future where green schoolyards could become standard practice, addressing the open space equity gab of our cities. As these sites serve as a hub for community empowerment, improved health, and education, as well as climate resiliency, the implemented model performs as an excellent precedent for co-production and alliance building.   This paper will feature the design research outcome of a seminar that implemented three pedagogical mechanisms to allow graduate students to embrace co-production strategies in the context of the design of multiple community schoolyards in East Cleveland and the ambition to connect these sites through a public space network generated in co-production with adjacent neighborhood communities. The paper will introduce the analysis of critical precedents including but not limited to TPL's Community Schoolyard's kits of parts and theories that investigate participatory design methods in spatial design by writers like Ben Strokes (2020), Marta Brković Dodig (2021), Linda N. Groat (2021), Anke Schmidt (2018) and others. At the core of this paper, the research will introduce the implementation of roleplays conducted with actors and students to stage the dynamics of different community interests and potential tensions. The discussion will include the presentation of design strategies developed during this semester that put the integration of game mechanisms at the project's core to facilitate for co-production. Lastly, the work will conclude with a reflection on the introduced pedagogical framework and the next experimental steps to explore an emerging field of design strategies that centers around game scenarios, simulation games, and storytelling as an emerging but essential part of our disciplinary canon.

Design: Building Typology: Process and Performance
Saturday, March 16, 2024, 11:00am-12:30pm

The Calgary Japanese Community Centre Project: A Case Study for Inclusion, Diversity, Equity & Accessibility in Design

Henry Tsang, Athabasca University

The newly redesigned 15,000 sqf Calgary Japanese Community Centre is a cultural and community hub located in the inner-city community of Killarney in Calgary, Canada. The project replaces their existing building that has been deemed unfit for retrofit due to numerous issues with deterioration, performance and costs of repairs. In addition, due to the aging membership, the Calgary Japanese Community Association (CJCA) has witnessed a steady decline in members which has dire implications for the CJCA's social and cultural sustainability, not to mention its longevity and economic viability. The building is 2.5 stories in height and constructed from renewable heavy timber framing. Taking all this into account, the new Centre's design aims for the highest green, accessible and inclusive design standards, while catering to the broad demographic spectrum of Calgary's ethnic Japanese community (Nikkei) and the broader community of Killarney, serving as a unique backdrop for a case study for Inclusion, Diversity, Equity and Inclusion (IDEA) in design.

Collective Comfort

Elizabeth Galvez, Rice University
Dalia Munenzon, University of Houston

American desert cities designed and built at the turn of the century in conjunction with the advent of air-conditioning technologies are able to house millions of Americans by relying primarily on fossil-fuel to supply relief from extreme hot weather. The Phoenix metro area, or The Valley Of The Sun as it is known to locals, experienced 145 days reaching temperatures over 100˚F in 2020 according to the National Weather Service. The increased probability of a longer-lasting heat-wave, combined with the over demand of electrical power supply during extreme weather events can be catastrophic, especially to the most vulnerable communities. This phenomenon, as evidenced by the ERCOT blackout that caused millions of individuals to go without energy supply during an extreme winter storm in Texas has made more tangible the risk that extreme weather events pose to a limited electrical supply.   Today, municipal government, local communities, and grassroots organizations, coupled with environmental researchers in the Phoenix metro area have taken note of the risks that heat poses to human livelihoods and are working to develop cooling centers as strategy to deal with heat insecurity, especially in the most vulnerable communities. As the climate crisis brings more extreme temperatures to The Valley in combination with the need to reduce fossil-fuel reliance and the use of scarce water resources, Collective Comfort aims to develop a public program that re-thinks the cooling center as an educational resilience hub. Furthermore, Collective Comfort aims to bring education on heat risk and weatherization efforts to the forefront, helping to destabilize the fossil-fuel reliant single-family home by providing alternative visions that foreground collectivity and community resilience in desert cities.   To address equitable-cooling in relationship with an over-reliance on private mechanical, electrically powered air-conditioning technologies, we propose to support interdisciplinary, existing efforts by developing design principles and strategies that inform the cooling center as a resiliency and climate education hub.   Resilience hub design guidelines will support a replicable framework for new construction and adaptive reuse. The framework will address urban site selection in relation to the community needs, basic list of proposed programs and strategies to identify culturally appropriate program needs, design strategies, energy systems, materials and construction methods. These guidelines and framework documents will serve our community partners and stakeholders as they develop the Phoenix metro area "resilience hub necklace."

Poly Canyon Accessory
Dylan Krueger, James Madison University

You might know of California's Central Valley because you passed through it on your way to Yosemite National Park. Perhaps it is because of the famed Sun Maid California Raisins television commercials and subsequent Emmy-winning blues group - or maybe you just eat a lot of almonds.   You might not know the area's architecture. In addition to the physical artifacts of agricultural production, the Central Valley Accessories (Accessories for short) within these agricultural areas have shown their immense presence within the locale. In an otherwise dense array of crop and orchard contours, Accessories are the only semblances of built landmarks in California's Central Valley.   I concede that Accessories are not visually dazzling by any standardized architectural metrics. However, they should be acknowledged as valuable to the field. Accessories represent a cohesive typological group - their scales, forms, materials, colors, and programmatic uses provide a notably consistent visual language.   As a typological series, Accessories have determinable qualities: mute, modest, rude, subdued, humble, unassuming, or somber. We can evaluate the group using a common set of terms, to produce a catalog of quotidian forms that challenge the values of contemporary architectural discourse.   Acknowledging the value of architecture outside of established considerations can be uncomfortable but may support a more diverse representation in our undisclosed architectural dialogues - something many would contend as a necessary change for our historically insular community. If we gaze at these Accessories, in dialogue with self-conscious objectivity, their significance becomes comparable to the architecture we cherish.   As rooted in type as they are, Accessories are manifestations of the residues of other factions: they are not designed or built by Architects. Instead, their formal, material, and programmatic specifications are produced by cultural, political, economic, and legislative pressures. To speak about Accessories means to speak about the residual outputs of the commonplace. The only way to champion the residues of the commonplace is to encourage institutional conversation. Poly Canyon Accessory, located on Cal Poly, San Luis Obispo's campus, is an installation designed to highlight the overlooked built fabric of the Central Valley in California. Made of plywood, and characterized by no accessible interior, it defines space around it. This Accessory provides necessary shade and views directed toward the canyon's other structures. Initially, the installation may appear to be an ordinary structure situated in the countryside, but it is actually an asymmetrical structure, a 10'-by-10' mass, 15' tall, that attracts hikers frequently passing through the canyon. It borrows formal and material properties from the Valley, including familiar elements like a pitched roof, a raised heel truss, and overhanging eaves made of CDX plywood treated with whitewashed lime for 2' lap siding and 1'-6" shingles.

Susan's House, Design for a New Typology

Mary English, Auburn University
Xavier Vendrell, Auburn University

The house is in the oldest neighborhood in San Antonio, Texas. Lavaca is a historic district and is on the National Register of Historic Places. The design was required to follow their historic design guidelines and approval by their design review board. Requirements included a front porch, specific roof profile, window proportions and materials.

The lots in this section of Lavaca are narrow and deep and the traditional typology of the neighborhood results in little opportunity for a relationship between interior and exterior. The resulting arrangement is front yard, house, and back yard. Susan's house stretches deep into the lot making space along its length for a series of courtyards and 2 porches, one required, facing the street and one, screened, a flexible room at the center of the house.

The solid wood door, at the front porch, leads into an exterior courtyard space, an outdoor foyer. From there a door accesses the interior, with courtyards, crossed and diagonal views, and transparencies.

The courtyards, oriented south-east, capture as much light as possible, organize the house with each interior and exterior space similar in scale. The screened porch is at the center of the house and the center of activity of the family. The use is flexible, dining room, living room or sleeping room with a nice breeze. The screened porch and the courtyards with trees modify the microclimate and enhance the airflow at the heart of the house.

The house is 1,967 sf of interior space with a spare material palette (concrete floors, white walls, metal roof and aluminum windows) where the only material expressed is the pair of solid wood entry doors to signify threshold. With this attitude, the exterior of the house adapts to the context of the neighborhood but creates some unexpected spaces inside.

SOCIETY + COMMUNITY: CLIMATE JUSTICE AND RESILIENCE

Saturday, March 16, 2024, 11:00am-12:30pm

Climate Resilience through Community Resilience: A Model for Engaged Design from Coal Country

Jeff Fugate, University of Kentucky
Brent Sturlaugson, Morgan State University
Rebekah Radtke, University of Kentucky
Baylen Campbell, Invest Appalachia

In 2021, the authors launched Climate Resilience through Community Resilience, a multi-year engagement in Central Appalachia between the University of Kentucky's Studio Appalachia and Hazard KY, approximately two-hours away. Challenging the traditional expert-client relationship, the initiative aligns local expertise, community leadership, and design capacity to address both historical disinvestment and the compounding effects of climate change in the region through sustained engagement and participatory design.   There are multiple examples of design pedagogies with robust components of community engagement, notably the University of Minnesota's multi-year engagement in North Minneapolis and famously Auburn's Rural Studio. Likewise, there are multiple examples of design pedagogies addressing the climate crisis. Less prevalent are ongoing institutional projects that apply sustained community engagement methodology to climate resilience, particularly in a rural setting far afield from the university campus. This paper articulates the urgency and the precarious nature of climate resilience in the region; situates our program design within broader engagement and pedagogical practice; and introduces an assessment method as a means of documenting potential impact.

Disaster, Disruption, Desertification : Rethinking the Architecture of Activism, Relearning from a Medieval Ecological Disaster

Brendan Shea, University of Southern California
Noémie Despland-Lichtert, Texas Tech University

Deserts are among the keepers of some of humankind's oldest artistic and architectural evidence; rock art artifacts in the central Sahara desert have been dated to 12,000 years old, fragments of petroglyphs along the shore of a desiccated lake in Nevada have been measured to at least 10,500 years old, and the earliest known scaled-drawings are neolithic-era engravings preserved in the deserts of Jordan and Saudi Arabia estimated to be at least 9,000 years old. However, on a global scale, deserts—and the multitude of ways in which human societies influence, inhabit, and, increasingly, expand them—are changing at an unprecedented pace in the 21st century, owing in large part to the rapidly compounding effects of anthropogenically-induced climate change. For instance, the UN estimates that globally every year 120,000sq km of land are lost to desertification—the human-initiated process of aridification of previously arable land. Through a series of collected case studies, this paper investigates the distribution and design of deserts, and in the process, disrupts fixed notions about the cultural, political, and ecological dimensions of these contested—and continuously changing—landscapes. First, the paper presents a condensed historical genealogy of experimental "desert-based" arts & architecture pedagogies which feature educational models aimed at immersion within and sensitivity to desert landscapes. Then, it proceeds to detail and critically appraise the contemporary activities & activism of The Arts of Ecology programme, an ongoing interdisciplinary project in the EU which intersects disparate researchers from across the arts, humanities, and sciences within the context of a Special Habitat Conservation Area in central Poland now known as the Błędowska Desert—a site at the edge of Europe that testifies to evidence of medieval environmental disruption, human-initiated ecological disaster & persistent desertification. Through investigation of the workshops, performances, installations, and classes conducted on-site over the last five years, the paper catalogs the numerous means by which contemporary educators are using the arts in Błędowska to re-trace the history of environmental degradation and re-consider the ongoing environmental conservation efforts of this anthropogenic desert.Linking these pedagogical efforts with a constellation of geological, technological & infrastructural trajectories as well as a host of political tensions, ultimately, the research is inscribed within a broader discourse on the concept of disaster, citing Easterling, Solnit & Bendell among others. The paper argues that the Błędowska Desert serves not as a model for a return to the fiction of a pristine, untouched wilderness, but instead offers an opportunity to collectively consider the fragile realities of ecosystems, social structures, and built environments alike. In conclusion, the paper asks how the view from the anomalous, anthropogenic desert of Błędowska—and the actions of its arts and activist community—can provide critical and creative lessons for how to adapt, with solidarity, agility and resilience, in the face of the 21st century's impending emergency of climate dysregulation and global desertification. Might reconsidering buildings & cities in relation to other historical environmental disasters through new modes of contemporary arts & architecture education make space for imagining new visions & possibilities for the future of built & natural environments?

"What to Build and Rebuild, Whom to Protect?" Affordable Housing, Digital Technology, and Climate Adaptive Design

Brent Sturlaugson, Morgan State University
Kamalesh Panthi, Morgan State University

In the built environment, the impacts of climate change often exacerbate existing social inequalities, including access to affordable housing. At the same time, the production of new construction materials for expanding the affordable housing supply only adds to the destructive effects of the changing climate. As part of the collective effort to restore social justice and reverse climate change—or what the philosopher Olufemi Taiwo calls "the just world to come" [1]—building designers have the potential to contribute in three specific areas. First, experiments with digital technology and robotic assembly have demonstrated significant improvements in the provision of affordable housing [2]. However, the application of these tests often requires greenfield sites, and in an era of sustained population growth alongside a growing number of landscapes rendered uninhabitable by climate change, adapting these experiments to brownfield sites in existing urban centers becomes imperative. Second, many precedents have shown affordable housing to be compatible with the reuse of existing buildings in historic districts [3], but these applications are limited in scope. In these cases, the unique character of many historic buildings impedes widespread renovation due to the high demand for skilled labor. Third, techniques for integrating digital technology with historic preservation practices have blossomed in recent years [4], but these techniques often involve costly equipment that serve a narrow purpose. Taken together, this research addresses these three areas through a series of questions: How can building designers adapt the urban environment to improve access to affordable housing? What opportunities exist for the integration of digital technologies throughout the design and construction process? How can these adaptations be applied in historic urban centers to reduce material consumption and preserve the existing morphology? Most importantly, who benefits from these processes and how?   In short, this paper argues for the reuse of existing buildings to create affordable housing on a meaningful scale by leveraging a suite of digital design and fabrication tools. The paper presents a framework for design that integrates high-resolution photogrammetric and laser scanning, building information modeling and robotic fabrication, as well as carbon accounting and cost estimation. Following Taiwo's inquiry of "what to build and rebuild, whom to protect," [5] the paper concludes with a demonstration of how the design framework can be applied, using Baltimore as a case study. Ultimately, the research joins a growing body of scholarship that marshals interdisciplinary expertise to confront the adaptive potential of the built environment in pursuit of climate justice.

IDEA Climate Justice Research - House 360 Prototypes
April Ward, Prairie View A&M University

The REDACTED University (HBCU), School of Architecture, Integrated Design for Environmental and Climate Justice Research (IDEA-CJR) aims to strengthen resilience in previously segregated and historically significant communities in the City of Houston most impacted by the compounded effects of environmental injustice over time. This regional disaster resilience research-based design studio in the Gulf Coast identified and addressed stakeholder needs through a regenerative, integrated design, service-learning approach (for the past 8 years). Resident homes in the Gulf Coast are disproportionately negatively impacted during extreme weather events. Fourth-year architecture students in the IDEA-CJR studio conducted qualitative and quantitative stakeholder need assessments during pre-design meetings with seniors aging in place during and after extreme weather events associated with; hurricanes, power grid failure, poor indoor air quality and flooding. Student designs of pocket communities with smart homes emerged from community-driven feedback, meetings with industry professionals in building performance and municipal leaders in Houston.   The architecture students and research assistants conducted and experienced applied research in energy efficient building envelope design with the goal of providing useful and sustainable benefits to those in the local and regional community. Students designed House 360, a climate responsive, hurricane-resistant, micro-housing prototype with renewable solar energy addressing climate justice issues in the Gulf Coast Region. IDEA-CJR is designed to serve and nurture the needs of a growing global environment awareness and meet the demands of energy efficient sustainable building design and built environment while mitigating climate change and environmental impacts in our society. Two climate-responsive, hurricane-resistant, housing prototype iterations that address climate justice issues in the Gulf Coast Region were built in 2023; the Houston Habitat House 360 and the Prairie Dwelling House 360.

HEALTH: ARCHITECTURE & THE HUMAN EXPERIENCE

Saturday, March 16, 2024, 11:00am-12:30pm

Spatializing Reproductive Justice

Lindsay Harkema, City College of New York
Lori Brown, Syracuse University
Bryony Roberts, Columbia University

Coined in 1994 by a caucus of Black women activists, reproductive justice is the "human right to maintain personal bodily autonomy, have children, not have children, and parent the children we have in safe and sustainable communities."1 After the overturn of Roe v. Wade, access to reproductive healthcare is radically restricted across the U.S., compounding systemic race, gender, and class-based inequities that have always made healthcare inaccessible for many. The landmark Dobbs v. Jackson Women's Health Organization decision in 2022 rolled back nearly 50 years of reproductive rights protections and unleashed a plethora of laws that make it more difficult to access reproductive health care, riskier to assist those seeking care, and precarious to teach about issues of race, gender, and sexuality. As stated in the dissenting opinion by Justices Breyer, Sotomayor, and Kagan, "Whatever the exact scope of the coming laws, one result of today's decision is certain: the curtailment of women's rights, and of their status as free and equal citizens."2 In the U.S. today, bodily autonomy and academic freedom are geographically situated. Within this context of curtailed freedoms, architects and educators must confront the spatial realities of these restrictions. New dialogues must emerge at architecture's intersectional edges - between designers, activists, social justice advocates, legal experts, public health practitioners, and students - to explore how the built environment can better support human lives.   In Fall 2022, collaborative design studios at three New York architecture schools investigated the spatial, legal, and social logistics of reproductive healthcare access in the increasingly hostile political context of the U.S. The studios addressed the intersectional and compounding factors of race, gender, and class as they impact an individual's access to care. The collective research informed students' speculative design proposals for facilities, systems, and networks enabling reproductive care access. The studios were complemented by a series of conversations with guest experts in the fields of public health, social justice, reproductive healthcare, law, and design.   Building on the studios' work, a forthcoming exhibition entitled "Spatializing Reproductive Justice" will foster a national and inter-institutional dialogue on reproductive justice, growing its content and network to include work by students and faculty from other schools. The exhibition will travel to academic and cultural institutions in states that are protective and restrictive of reproductive rights, showcasing how architects can design and advocate for built environments that support the human rights principles of reproductive justice. For architecture this means more than the design of clinics, it is also imagining new spatial hybrids of accessible healthcare, housing, childcare, education, landscape, and public infrastructure to support the autonomy and agency of people shaping their own reproductive futures.   Amidst current threats to bodily autonomy, reproductive rights, gender-affirming healthcare, and academic freedom, this work conveys the critical realities of reproductive healthcare access and how the tools of architecture are essential to the pursuit of social justice. They also raise critical questions for the discipline about how spatial practices can interrogate, resist, and disrupt systemic threats to human bodies and lives that have previously been unacknowledged.

The Global State of Design for Health Education: Reflections on an International Student Competition

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Zonghan Lyu, Texas A&M University

INTRODUCTION   The International Union of Architects (UIA) designated 2022 as "the Year of Design for Health." Supported by over 100 UIA member countries, this global initiative emphasized the significance of health in architectural practice.1 As a signature event, UIA organized an international student competition: "The Next Generation of Stroke Rehabilitation Center." This competition invited college students to present innovative designs for a 30-bed rehabilitation center. Over 700 teams registered, with 175 teams from 40 nations submitting their works. In May 2023, the jurors chose five winners and acknowledged seven with honorable mentions.   THEORETICAL FRAMEWORK   The theoretical framework was developed based on the Design for Health Concepts, Evidence-based Design Approach, and the Person-Environment Fit theory.   RESEARCH AIMS   This study examines the current state of global Design for Health education by analyzing the competition entries. The objective is to identify the strengths and weaknesses of student designs and to provide guidance for GUPHA and the UIA Public Health Group to develop evidence-based strategies that facilitate education in this field worldwide.   RESEARCH METHODS   Interviews with four jurors were conducted, and the jury's evaluation notes, and competition report were analyzed. This qualitative data underwent a thorough review and summarization. Two researchers employed a 29-question rating system across 11 categories, utilizing a 5-point Likert scale, to assess each entry. Mean scores and standard deviations were computed for each evaluation aspect.   RESULTS   Jurors noted that a majority of the entries displayed strong architectural design and graphic skills. Contrarily, the research team observed that only a handful of student teams undertook a literature review and conducted design research like surveys, interviews, and observations. Many entries missed articulating a compelling narrative about their design's intended users and how their design elements catered to these users' daily routines and necessities—key elements in ensuring an optimal user experience. Although the competition didn't explicitly demand sustainability, its integration is vital, especially considering the pressing climate crisis. Furthermore, one juror expressed concern over many teams' insufficient program analysis and development efforts. These observations from the jurors resonated with the rating system's findings.   DISCUSSION AND CONCLUSION   The UIA Year of Design for Health competition provides valuable insights into the current state of architectural education with a health focus. It underscores potential pathways for pedagogical advancement and international cooperation, setting the stage for nurturing the next generation of architects with essential skills and mindsets to enhance human health.

Understanding Staff and Student Experiences at the Campus Health Center

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Carissa Mysliwiec, University of Illinois, Urbana-Champaign
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Contemporary preoccupation with physical and mental wellbeing demands that we study physical environments to ensure they contribute to overall wellness. Despite scarce research probing them, student health centers on university campuses are no exception. The environments of campus health centers must encourage university students' mental and physical wellbeing while offering preventative and acute health services and providing a supportive work environments for staff. The McKinley Health Center, housed in a 97-year-old building, exists to provide university students with professional primary, specialized, and emergency healthcare and to serve as a campus center for medications, resources, and health education. This mission provided a framework for a post-occupancy study of the facility to structure advice for architectural renovations to improve staff and student experiences. Two research questions focused the study's mixed methods research design. 1. How do current environmental conditions at the facility influence experiences of student-patients, and staff, and staff-student interactions? 2. What physical-environment changes would improve these? We collected data through observation of physical traces, building-document analysis, two surveys administered to distinct user populations, and content from public online facility reviews. Through descriptive, content, and thematic analyses, we identified wayfinding, indoor environmental quality, and student-staff interactions as prominent themes in the experiences of student-patients as they seek care and health resources; and staff as they go through their daily work activities. McKinley's floorplan complexity underpins severe wayfinding challenges that frustrate student-patients and distract staff. Among our redesign suggestions, we propose color-coded wings to provide redundant cognitive cues, simplify directions, and ease patient anxiety. The introduction of color can also transform an environment perceived as "grey" and "boring". This relatively straightforward intervention can augment clearer signage. We believe this design approach can improve both student-patient and staff experiences and reflect an environment supportive of the student health and wellbeing priorities of the university.

Decentralizing infrastructure: expanding architectural practice towards equity and health

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The scope of an architect is often contractually limited to a short distance outside the exterior wall, yet buildings are connected to complex socio-ecological systems and industries that affect human and planetary health far beyond the site boundary.[1] Their social and environmental impacts are not evenly distributed across the globe.[2] Inequities also emerge at a local scale where buildings have the most perceivable impact, affecting anything from access and continuity of the public realm to microclimates. Decisions about a building's material, form, and site surfaces can contribute to or mitigate microspatial inequities—that is significant local variation in environmental hazard exposures, like heat,[3] air pollution,[4] and flooding[5]. When designed with a focus on equity and health, architectural interventions can expand beyond minimizing harm to regenerating local landscape ecosystems that improve human health and community resilience. This paper examines an equity-focused approach to designing green infrastructure (GI) in architecture projects situated in highly vulnerable areas, enabling buildings to directly contribute to broader objectives of urban resilience, health, and environmental justice.[6] GI is part of a range of nature-based solutions, from bio-based materials, to reforestation and coastal restoration efforts, seeking to replace or expand the capacity of hard infrastructure to mitigate and adapt to the uneven impacts of climate change. Yet many of these strategies operate at industrial or infrastructural scales, with the expected challenges of implementation and limited distribution of impacts. Decentralizing urban infrastructure is critical to resilience, building redundancy and capacity through a network of smaller system nodes that are less prone to cascading failures. Decentralized GI solutions fit the scale of architecture projects, with potential for more distributed impacts and incremental implementation. But this means individual architecture projects should be designed with more integrated teams and a better understanding of complex and dynamic interactions beyond the site. This knowledge is critical to mitigate microspatial inequities and pursuant health outcomes, and to maximize the cumulative impacts of multiple projects on climate resilience and public health. And it expands traditional site analysis, which relies on more static regional climate data like solar paths and shadow studies, towards transdisciplinary methods that co-generate knowledge about microclimates, hydrology, and ecosystem functions. This expanded approach necessitates (1) methods for measuring and anticipating local variation in hazards and (2) tools for incorporating these data into inclusive conversations with local stakeholders, each of which can inform individual building projects and, eventually, networks of building projects. Our transdisciplinary team is collaborating with the city of Chelsea, MA, designated an environmental justice community (see figs.1-4), to study how sensor networks and participatory modeling around architecture projects can generate and leverage local knowledge about microspatial inequities and mitigation by GI, to advance broader community health and equity goals. As part of this work, the concept of decentralization is proving to be a significant paradigm shift in rethinking green infrastructure, even among practitioners. This paper examines the meaning of decentralization in a multidisciplinary discourse, shares lessons from co-design activities in a specific context, and discuss broader implications to architectural practice.

Housing Connecticut: Designing Healthy and Sustainable Neighborhoods

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Housing Connecticut: Designing Healthy and Sustainable Neighborhoods is an interdisciplinary housing clinic inaugurated in the Fall 2022 semester at a university, organized by the School of Architecture's community design center. Initiated in response to the severe shortage of affordable housing in Connecticut, this course brings faculty and graduate-level professional students in Architecture, Law, and Management together to collaborate with local non-profit affordable housing developers and State government to produce concrete, actionable, affordable housing proposals. The clinic provides an integrated educational model and bridges academia, practice, and impact on our local community.

Over the semester, faculty from Architecture, Law, and Management, along with guest practitioners, offer students an intensive "boot-camp" style introduction to the issues and practice of affordable-housing design and development. Seminars on GIS mapping, data analysis, zoning, building codes, pro formas, financing, housing design, and community engagement provide a foundation for the students' work with their development partners. In parallel, student-led teams work directly with their developers to prepare new strategic models, to identify sites, and to create detailed design and development proposals. Educational models borrowed from all three disciplines, including case studies, rounds, supervision, and critiques are blended to provide a range of project-based learning support to the student teams.

In 2023, three student teams collaborated with New Haven based developers, making proposals for three sites in the city's most distressed neighborhoods. Anchored by affordable housing, projects critically engaged with other community development issues, including environmental justice, climate resilience, social equity, food scarcity, mobility, and health.

Housing officials from the State of Connecticut provided feedback throughout the course and made available pre-development funding to move projects toward realization. One of the three projects is currently moving towards construction. Three rounds of the clinic are currently planned, with the next in fall 2023.