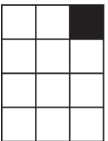# CA+P 2025
Research Symposium

College of
Architecture
and Planning

March 4, 2025

Welcome + Keynote
9:20AM - 10:30AM | Room:127

- **Welcome and Opening Remarks**
  Dr. Ajla Aksamija and Dr. Kateryna Malaia, School of Architecture

- **Can Serious Digital Geogames and Artificial Intelligence Help Create A Better World?**
  Dr. Alenka Poplin, Associate Professor, Iowa State University

Technology + Digital Realm
10:30AM - 11:30AM | Room:127

- **Skill, Stamina, and Luck: Fighting Fantasy Gamebooks**
  Dr. Jose Zagal, Division of Games

- **Energy-Efficient Retrofitting Strategies for Research Laboratory Buildings: Case Study at the University of Utah**
  Dr. Timothy Adekunle and Dr. Ajla Aksamija, School of Architecture

- **Integrating Building Energy Simulation and Data-Driven Models in Energy-Efficient Building Designs: A Framework for Building Energy Assessment**
  Dr. Emmanuel Aghimien, School of Architecture

lunch
11:30AM - 12:30PM | Room:129

Community Engagement + Visual Strategies
12:30PM - 1:30PM | Room:127

- **Rural Mass Housing in Ukraine: Agency, Change, and War**
  Dr. Kateryna Malaia, School of Architecture

- **Interdependencies in Post-Disaster Business Recovery and Relocation in Puerto Rico**
  Dr. Divya Chandrasekhar, Department of City & Metropolitan Planning

- **Mapping Complexity: Visual Strategies for Understanding and Communicating Situations and Processes**
  Dr. Daniel Zwangsleitner, Division of Multi-Disciplinary Design

break
1:30PM - 1:45PM | Room:127

Mindful Practices + Place-Based Research
1:45PM - 2:45PM | Room:127

- **Seven Facets of the Mindfulness-Environment Relationship: Reinforcing, Reminding, Restoring, Rewarding, Providing Refuge, Representing, and Instilling Responsibility**
  Dr. Nicole Porter, Division of Multi-Disciplinary Design

- **Receiving Communities in Rural Northeast: Lessons for Climate Migration**
  Dr. Damla Kuru, Department of City & Metropolitan Planning

- **Ad Hoc Ad Infinitum**
  Steven Chodoriwsky, Division of Multi-Disciplinary Design

closing remarks
2:45PM - 3:00PM | Room:127

break
3:00PM - 3:15PM | Room:127

Workshop: Book Publishing
3:15PM - 4:30PM | Room:128

- Dr. Ajla Aksamija and Dr. Kateryna Malaia, School of Architecture

Keynote Presentation

Can Serious Digital Geogames and Artificial Intelligence Help Create A Better World?

This talk concentrates on digital geogames, novel technologies and artificial intelligence. Geogames can be defined as games that concentrate on the well-being and regeneration of Gaia. They are designed with a purpose in mind that is more than just fun and entertainment. They provide opportunities for learning, co-creation and communication.

First examples of digital geogames utilized location-based technologies and incorporated the actual physical environment in the game concept. Further developments of geogames were built on integrating geospatial data and aimed at mirroring the real world in the game environment while using geographic information systems as their fundamental software architecture.

More recent developments explore the use of Minecraft game environment and concentrate on engaging children in discussions about the future of built environment. Other examples of geogames include games that encourage residents to participate in urban planning processes and games that allow for a discussion about cultural values and biodiversity. Artificial intelligence (AI) brings exciting developments into the world of geogames. These may include procedural content-generation in which AI automatically generates new content; the possibility to model player's behavior in response to the game environment and novel and creative ways of creating game characters.

The talk concludes with a discussion on how geogames help create better urban environments and provides examples and ideas of the impact geogames may have to help create a better world.

Dr. Alenka Poplin
Associate Professor, Iowa State University

abstracts:

Skill, Stamina, and Luck: Fighting Fantasy Gamebooks

Dr. Jose Zagal
**Professor,
Division of Games,
University of Utah**

"Skill, Stamina, and Luck" will be a platform study of the Fighting Fantasy (FF) gamebooks series first published in 1982. This series is arguably the largest, most diverse, and, having sold over 20 million copies in the 1980s, probably also the most successful commercially. This research will shed light on a significant yet understudied part of game history and provide insight into the design of interactive narratives and related games in the video game space.

A platform study is an interdisciplinary approach used for examining the technical, cultural, and social implications of a (generally) digital platform and how the platform shapes the creative works created for it, how users/players interact with those works, and the kinds of experiences that result from those interactions (see https://mitpress.mit.edu/series/platform-studies/).

Gamebooks are branching narrative games, generally published as books, wherein a story is experienced by reading discrete sections of numbered text. At the end of each section the player is offered a choice that includes a reference to another numbered section of text. Upon deciding, the player turns to the corresponding numbered section and continues reading. A distinction between gamebooks and branching narrative books (e.g. choose-your-own adventure) is the addition of rules, gameplay, and persistence. For example, in a gamebook, the reader may have to roll dice to fight monsters and keep track of damage taken using a character sheet. The FF books all made use of the same core rules and affordances as short-length paperback books. These elements combined (I argue) constitute an analog platform.

In conducting this platform study several methods will be used, including textual analyses of books in the series, graph analysis of branching structures, and combinatorial analysis of the Fighting Fantasy system as implemented across different books.

Energy-Efficient Retrofitting Strategies for Research Laboratory Buildings: Case Study at the University of Utah

This research study examined building performance and retrofitting strategies for reducing energy consumption in existing research laboratories. Research laboratory buildings are one of the most energy-intensive building typologies due to their high energy demands, complex building systems, and significant loads for mechanical cooling and ventilation. Retrofitting may extend building lifespan and improve their performance, energy consumption, carbon footprint, and occupants' comfort.

The study examined an existing research laboratory building at the University of Utah campus, utilizing a combination of research methods, such as archival and observational studies, field measurements of Indoor Environmental Quality (IEQ), building envelope and mechanical systems assessment, whole-building energy modeling, and simulations. Actual energy consumption data was collected for three years and compared against simulated data. Five different retrofitting options were considered, where four options represented low-impact retrofits (improvements to the building envelope and the lighting system), and one option represented deep retrofit (improvements to the building envelope, lighting system, and changes to the mechanical systems). The impacts of these retrofit options were simulated and compared to the buildings' simulated and actual energy consumption data.

Results show that the deep retrofit option would have the highest impact on energy savings, while the four low-impact retrofit options would have comparable results (and not significant improvements to the overall energy consumption). Therefore, improvements to mechanical systems are necessary to significantly reduce energy consumption and associated carbon footprint of existing research laboratory buildings,besides building envelope and lighting.

Dr. Timothy Adekunle
Associate Professor/
Interim Chair
School of Architecture,
University of Utah

Dr. Ajla Aksamija
Professor/
Distinguished Chair for
Resilient Places
School of Architecture,
University of Utah

abstracts:

Integrating Building Energy Simulation and Data-Driven Models in Energy-Efficient Building Designs: A Framework for Building Energy Assessment

This study examines the roles of building energy and data-driven models in building energy assessment and provides a framework for integrating both models into the assessment process. Generally, the continuous increase in global energy consumption and carbon dioxide emissions has contributed significantly to the current climate crisis, with recent studies indicating that about 40% of the global energy demand and 37% of the global carbon dioxide emissions are linked to the building industry. Therefore, there has been a continuous effort in the building industry to propose sustainable practices for improving energy efficiency and decarbonizing the built environment.

Currently, building energy models (BEMs), developed from energy simulation tools, are the most adopted approach for assessing energy-efficient design options. These have found relevance in providing accurate energy predictions at both design stages of new construction and in retrofits of existing buildings. Although the use of BEMs offers one of the most accurate representations of ground truth, their development can be time-consuming and computationally expensive, requiring multiple inputs and expert guidance.

With the recent interest in artificial intelligence, data-driven models (DDMs) and machine learning have become another viable alternative. DDMs can learn energy patterns with limited inputs and provide predictions of buildings' performance. This approach provides faster energy predictions while using a less computationally intensive approach.

In this study, the methodology for using BEMs and DDMs is presented. The study also presents a research framework for integrating both models during building energy analysis and energy predictions. It is expected that the findings in this study will be relevant to academics and practitioners in their explorations of sustainable and energy-efficient building solutions.

Dr. Emmanuel Aghimien
**Post-Doctoral Fellow,
School of Architecture,
University of Utah**

abstracts:

Rural Mass Housing in Ukraine: Agency, Change, and War

Rural homes built according to the state-manufactured projects are one of the most overlooked inheritances of the Soviet era. These homes emerged at the intersection of Soviet policies and functionalist design principles. But they have since transitioned into the realm of modern vernacular, as they were extensively modified by residents over the decades of use. In Ukraine, they range from the Stalin-era idyllic appropriations of the folk tradition, Khrushchev and Brezhnev-era utilitarian apartment blocks, pragmatic brick homes of the late USSR, and their post-Soviet eclectic modifications.

First, this study relies on Ukrainian archives, all-Soviet professional and popular media to catalogue omnipresent rural housing types in Ukraine. Second, through interviews and surveys it documents and analyzes changes that took place inside rural homes during the late Soviet decades and since the collapse of the USSR in 1991. Similarly, to urban homes, the transformations of rural dwellings reflect social continuities and upheavals of the late 20th and 21st century. Ukrainian rural built environment is unique despite the decades of homogenizing rule; this distinctive built fabric, a combination of the broad Soviet approach, and local design expertise, should be recorded and preserved.

The Russian invasion has heavily damaged many Ukrainian villages and many more are at risk of total destruction. Grassroots initiatives are already underway to preserve them: for example, volunteers organized by Ukrainian architects began documenting some Ukrainian vernacular housing typologies, to provide an easy reconstruction toolkit for families rebuilding their homes. However, this indispensable effort is largely formalist, as it focuses on the appearance of distinctive buildings, hardly addresses their complicated history, and the way they changed over time. This study is to mitigate this gap, to understand, and to preserve Ukrainian rural homes under threat.

Dr. Kateryna Malaia
Assistant Professor, School of Architecture, University of Utah

abstracts:

Interdependencies in Post-Disaster Business Recovery and Relocation in Puerto Rico

Dr. Divya Chandrasekhar
Associate Professor/ Chair,
Department of City and Metropolitan Planning, University of Utah

Despite the fact the small businesses make up almost 99% of the U.S. economy, little research has been focused on recovery experiences of businesses and the challenges they face. This is problematic for community recovery at large which depends on successful businesses recovery. Existing research indicates that businesses are less likely to take mitigative actions prior to a disaster, are generally low resourced and limited in their ability to develop alternative supply and revenue streams, and have fewer but also less effective programmatic options for post-disaster aid.

Numerous internal and external factors influence a business's recovery and relocation decisions after a disaster. While post-disaster business recovery studies have existed since the 1990s, earlier works have tended to frame recovery as a matter of internal capacity affecting their recovery, namely factors such as a business sector, size, financial status, or business owner or manager's entrepreneurial skills. Where external factors were considered, these were conceptualized in economic terms as indirect effects of disruptions in supply, distributions, labor access and consumer demand. However, this purely economic framing of business recovery has come under question recently in view of research that shows that businesses can be social as well as economic actors in the community. Recent studies have examined business recovery as occurring in an ecosystem of actors and events that influence their own decisions— such as governmental actions, nonprofit actions, household recovery and infrastructure restoration. Recent studies have also shown that business recovery shares characteristics with recovery of other "social" actors such as household such as for example, attachment to place and use of social capital. This implies a need for more holistic research on the dynamic interdependencies between business relocation decisions and decisions occurring in other community systems and spaces, including actions of households, other businesses, utilities, governments, and non-profits.

The study's objective is to examine such interdependencies in the recovery experiences of local businesses in two communities of Puerto Rico: Comerío and Loíza. These communities were severely impacted in Hurricanes Irma and Maria in 2017. Data collection involved a purposive survey of 150 businesses in both communities conducted in June 2022 by a team of bilingual students from the University of Utah. The survey was conducted in Spanish and the questionnaire covered topics such as the

abstracts:

operational status of business, disaster impact, housing status of business owners, relocation/reconstruction or business closure decisions, formal participation in the R3 program, recovery financing, and interaction with peers and other stakeholders. The survey data was translated into English, processed and then analyzed. Survey analysis involved performing a binary regression analysis to test the relationship between intent to relocate and variables related to business profile, hazard risk perception, damage received, aid assistance from government and nonprofit sources, infrastructure restoration, and relocation actions of residents and other businesses. The study finds that relocation actions of residents and financial ties to place can positively affect decisions to stay in place while loss of utilities, loss of sales and availability of governmental aid can negatively affect these decisions.

The findings of this study highlight the importance of broader community-level events and actions to local business relocation decisions. The study findings also add to emerging literature on the social role of small businesses in community functioning after disasters. Finally, the study contributes to better community recovery policymaking by advocating for improved coordination between economic policies and policies surrounding housing and household recovery.

Mapping Complexity: Visual Strategies for Understanding and Communicating Situations and Processes

This contribution explores the use of Situational Analysis (Clarke, 2005) as both a research method and a communication tool for understanding complex situations and processes.

My dissertation, "*The quest for better housing*" completed in 2018 at the Polytechnic University of Turin in Italy, utilized mapping strategies within the Situational Analysis (SA) framework to analyze and represent the complexity of participatory housing processes. This approach facilitated an in-depth examination of the situation, its surrounding parameters, the involved actors and actants, and the primary and secondary discourses at play.

Building on this foundation, extensive use has been made of the communication and dissemination of these findings. Experiences presenting the research at conferences, lectures, poster sessions, and during the dissertation defense have reinforced the suitability of SA as a tool for unpacking and effectively communicating complex processes.

Similarly, work in studio teaching has highlighted the pedagogical value of SA. By incorporating SA into studio exercises, students have been guided in comprehensively analyzing and interpreting complex planning and architectural situations. This approach has demonstrated the potential of SA not only as a research method but also as a teaching tool for cultivating critical and analytical thinking skills in students.

Through the interplay of these three areas—research, dissemination, and teaching—I emphasize the broader applicability of SA in both academic and practical contexts.

This contribution explores the challenges and opportunities of using graphical representations to convey complexity, assessing the effectiveness of situational, positional, and social worlds/ arenas maps in understanding situations. It examines their suitability for communication, particularly in presentations, while considering how visual maps and text enhance engagement. Additionally, it evaluates mapping strategies as a teaching tool to deepen students' understanding of complex issues.

Clarke, A. (2005). *Situational Analysis: Grounded Theory after the Postmodern Turn*. Thousand Oaks, CA: SAGE.

Dr. Daniel Zwangsleitner
Associate Professor, Division of Multi-Disciplinary Design, University of Utah

abstracts:

Seven Facets of the Mindfulness-Environment Relationship: Reinforcing, Reminding, Restoring, Rewarding, Providing Refuge, Representing, and Instilling Responsibility

Dr. Nicole Porter
Professor/Chair, Division of Multi-Disciplinary Design University of Utah

Mindfulness-based programs (MBPs) are generally characterized as being a-spatial; participants are prompted to attend to inner mind-body experiences, not the external environment. Mindful awareness can be accessed 'wherever you go' (Kabat-Zinn, 1994.) However, theory and evidence in several domains, for example environmental psychology, sustainability studies and Buddhist literature suggest that spatial qualities and relationships potentially play an implicit (and at times explicit) role in contemplative practice, cognition, health treatment and behavior. For example, a growing body of interdisciplinary research is exploring how mental health and well-being may be enhanced by integrating mindfulness practices within natural settings, as both have been shown to positively influence mind-body states (Kaplan, 2001; Porter, 2018;) and sustainability scholars draw links between mindful practice, environmental awareness and pro-environmental behavior (ICEM, 2023; Wamsler, 2022).

This presentation identifies seven facets of the mindfulness-environment relationship in current discourse. I posit that qualities of space have the potential to: 1) **reinforce** intention through environments that support, or are compatible with, mindful practices; 2) **remind** practitioners to be mindful by using sensory cues or spatial configurations i.e. sounds, to prompt awareness; 3) **restore** attention at a neuro-physiological level, in accordance with Attention Restoration Theory (Kaplan, 1995) and the biophilia hypothesis (Kellert et al., 2013); 4) **reward** practitioners with positive external sensory experiences i.e. positive affect and 'taking time to [mindfully] smell the roses' (Dunn et al., 2023); 5) provide **refuge** and nervous system regulation by serving as an external anchor for attention for meditators experiencing overwhelm, in line with trauma-sensitive approaches; 6) **represent** mindful states and concepts through spatial metaphors i.e. lakes, mountains, sky, illustrating abstract ideas in concrete ways, and 7) instill compassion and **responsibility** toward self and others – including non-human life and the spaces that sustain it – through environmental interconnectedness and appreciation.

By identifying various ways in which environmental considerations may play a role in mindfulness practice, this research sets a framework for further investigation of the implications for MBCT, including theory, research and teaching adaptations that

abstracts:

intentionally incorporate the '7 R's' as potential mechanisms of change.

Dunn, B.D., Wiedemann, H., Kock, M. et al. (2023). "Increases in External Sensory Observing Cross-Sectionally Mediate the Repair of Positive Affect Following Mindfulness-Based Cognitive Therapy in Individuals with Residual Depression Symptoms." *Mindfulness,* 14, 113–127, https://doi.org/10.1007/s12671-022-02032-0.

ICEM (2023). International Conference of Environmental Mindfulness (conference website). Available at: https://www.environmentalmindfulness.org/.

Kabat-Zinn, J. (1994). *Wherever You Go, There You Are*. London, UK: Piatkus Books.

Kaplan, S. (2001). "Meditation, Restoration, and the Management of Mental Fatigue." *Environment and Behavior*, 33(4), 480–506. https://doi.org/10.1177/00139160121973106.

Kaplan, S. (1995). "The Restorative Benefits of Nature: Toward an Integrative Framework." *Journal of Environmental Psychology*, 15(3), 169-182. https://doi.org/10.1016/0272-4944(95)90001-2.).

Kellert, S., Heerwagen, J. and Mador, M. (2013). *Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life*. Wiley.

Porter, N., Bramham, J. and Thomas, M. (2018). "Mindfulness and Design; Spaces For Wellbeing." In *Creative Practices for Improving Health and Social Inclusion,* Saavedra, Javier, Español, Alicia, Arias, Samuel and Calderón, Marina [eds.], 199-209. Seville, Spain: University of Seville

Wamsler, C. (2022). "What the Mind Has to Do with the Climate Crisis: Mindfulness and Compassion as Pathways to a More Sustainable Future." Mind & Life Institute. Available at: https://www.mindandlife.org/insight/what-the-mind-has-to-do/.

Receiving Communities in Rural Northeast: Lessons for Climate Migration

Dr. Damla Kuru
**Post-Doctoral Fellow,
Department of City &
Metropolitan Planning,
University of Utah**

Increasing climate impacts motivate migration across the globe. Although climate-induced migration is projected to impact US communities, literature on the numbers, locational choices of the movers, and implications for receiving communities is scarce.

This study, focusing on recent population mobility towards rural areas, explores *whether climate-induced migration is evident in rural NE* and *what infrastructure-related and socioeconomic outcomes can be expected in climate migration-receiving communities*, if climate migration pushes populations towards rural (inland) Northeast, as suggested by projections. It presents on-the-ground data derived from focus group participants (n=27) - local housing experts in *hotspots*, i.e., 22 rural counties of NE which experienced the highest relative numbers of in-movers between 2016-2020.

It revealed that movements were mainly driven by socioeconomic and technological changes, catalyzed by COVID-19 that pushed urbanites towards rural areas. Although communities received a limited number of newcomers from climate-impacted areas, climate was not a major motivation for movers. The influx created significant challenges for housing market, physical and social infrastructure, and socioeconomically disadvantaged groups. COVID experience opened a window of opportunity to prepare communities for just and sustainable outcomes of future mobilities driven by hazards of many kinds.

It highlighted the need to understand uncertainties - e.g., timing and amount of climate migration, by focusing on the longer horizon. Receiving communities can achieve desirable outcomes if they integrate climate migration into their plans and address existing challenges to attainable/affordable housing supply, while also enhancing climate resilience, and the integration of newcomers into host communities.

Ad Hoc Ad Infinitum

This contribution proposes a piece of writing for oration based on ongoing artistic/design research about the contemporary American campus, and more specifically in response to contemporary spatial specificities of/at the University of Utah.

The presentation aims to describe how today's campus—as a corporate entity, as a corporeal student body, as a physical terrain—contends with its role as a site for societal discourse, and how it comes to bear on notions of community, pedagogy and spatial practice. "*Ad Hoc Ad Infinitum*" is the provisional title for the larger publication project, and it is from this manuscript of texts and images that I will be showing excerpts based on methodologies of in-situ fieldwork and archival research— themselves tested and transformed through in-class exercises with students. Meditating on performance theorists Rebecca Schneider and Diana Taylor's differentiation between records and gestures - the former an evidentiary or sanctioned material trace, the latter often an ephemeral encounter between bodies - this presentation is approached as a real-time site both of ongoing work in dialogue with discourses in the scholarship of pedagogy, devised theatre research, and experimental poetics.

Steven Chodoriwsky
Assistant Professor, Division of Multi-Disciplinary Design, University of Utah

abstracts: