

## Colter Wehmeier

PhD, Informatics

University of Illinois Urbana-Champaign

PhD Candidate, Science and Technology in Archaeology and Cultural Heritage

The Cyprus Institute

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Portfolio (projects, videos, documentation): colter.us

### EDUCATION

#### University of Illinois Urbana-Champaign

2020–2026

PhD, Informatics (School of Information Sciences)

Concentrations: Art and Cultural Informatics; Design, Technology, and Society

Dissertation: *Committed Artifacts, Situated Knowledges:*

*Propositional Modeling as Design-Research Paradigm*

*for Digital Cultural Heritage*

Advisors: Michael Tissenbaum (Education, 2023–2026); prev. Stanley Ruecker (Art & Design, 2021–2023); Donna Cox (Art & Design, 2020–2021)

Committee: Georgios Artopoulos (co-chair, STARC, CYI); Kathryn E Holliday (Architecture); Karrie Karahalios (Computer Science, MIT); Michael Twidale (Information Sciences)

#### The Cyprus Institute

2020–

PhD Candidate, Science and Technology in Archaeology and Cultural Heritage

Advisor: Georgios Artopoulos (Science and Technology in Archaeology and Cultural Heritage)

Committee: Michael Tissenbaum (co-chair, Education, UIUC); Mihalis Nicolaou (Computer Science, CaSToRC); Nikolas Bakirtzis (Art History, STARC)

#### University of Illinois Urbana-Champaign

Master of Architecture (School of Architecture)

2019

Bachelor of Science in Architectural Studies (School of Architecture)

2016

### APPOINTMENTS

#### The Science and Technology in Archaeology and Cultural Heritage Research Center (STARC), The Cyprus Institute

2017–Present

Graduate Research Assistant, Virtual Environments Laboratory (VELab)

#### National Center for Supercomputing Applications (NCSA), University of Illinois Urbana-Champaign

Fiddler Innovation Fellow, Advanced Visualization Lab (AVL)

2016–Present

SPIN Advanced Fellow, AVL

2015–2016

SPIN Fellow (Students Pushing Innovation), AVL

2013–2014

## RESEARCH INTERESTS

Design-based research; participatory methodologies; architectural digital humanities; immersive research instrumentation; social computing and collaborative platforms; virtual place-making; digital heritage creation and interpretation; media archaeology, study and valorization of modern heritage.

## TEACHING INTERESTS

Practice-led design studio; creative technology; digital heritage, storytelling, and visualization; research methods for digital designers (HCD, ethical behavior-analytics, community-engaged, GLAM-integrated); interactive media and game studies and design; spatial computing (VR/AR); 20th–21st century critical discourses on design, theory, technology, and society.

## PUBLICATIONS

### Peer-Reviewed Articles and Conference Proceedings

Wehmeier, Colter, and Georgios Artopoulos. Under review. "Propositional Modeling for Digital Heritage: Committed Artifacts, Situated Knowledges." *ACM Journal on Computing and Cultural Heritage (JOCCH)*.

Wehmeier, Colter, and Georgios Artopoulos. 2023. "MetaFraming: A Methodology for Democratizing Heritage Interpretation through Wiki Surveys." In *Proceedings of the 20th International Conference on Culture and Computer Science (KUI '23)*. ACM. DOI: 10.1145/3623462.3623465.

Wehmeier, Colter, Georgios Artopoulos, Francesca Maria L. Russa, and Cettina Santagati. 2022. "Scan-To-Ar: from Reality-Capture to Participatory Design Supported by AR". In *Representation Challenges: New Frontiers of AR and AI Research for Cultural Heritage and Innovative Design*, edited by A. Giordano, M. Russo, and R. Spallone. FrancoAngeli. DOI: 10.3280/oa-845-c238.

Artopoulos, Georgios, Panayiotis Charalambous, and Colter Wehmeier. 2019. "Immersive Computing and Crowd Simulation Techniques in Modelling Urban Commons: The Case of Nicosia-Cyprus." *International Journal of E-Planning Research* 8, no. 1: 35–49. DOI: 10.4018/IJEPR.2019010103.

### Book Chapters

Wehmeier, Colter. 2025. "Are Surveys Necessary? Designing Virtual Environments for Participatory Research." In *Clever Design in Critical Times: Conceptualizing the Callidocene*, edited by Milena Radzikowska, Stan Ruecker, Guilherme Meyer, and Teresa Dobson. Bloomsbury Academic.

Smaniotto Costa, Carlos, Juan A. García-Esparza, Georgios Artopoulos, Colter Wehmeier, and Mohammed Rafat-Saleh. 2024. "Heritage-Based Storytelling and Narratives. The Added Value of Engagement in Placemaking and Heritage Communication." BRILL: *Placemaking in Practice* 1.

### Essays, Reports, and Edited Works

Artopoulos, Georgios, G. Redaelli, F.M. Montagnino, and Colter Wehmeier. 2024. "A DARIAH Impact Case Study: UDigiSH-Digital Practices for the Study of Urban Heritage is cooperating with artists and NGOs to crowdsource local knowledge on built heritage at risk." Cyprus Institute; Politecnico Milano; University of Illinois Urbana-Champaign.

"Memory in Uncertainty, Web Preservation in the Polycrisis: A New Design Congress Report", New Design Congress, 2022, Academic Reviewer

"#The-New-Aesthetic: Objects in Mirror are Much Closer than They Appear.", New Models Codex Y2K20, 2021, New Models, Article Author

**HONORS AND FELLOWSHIPS****Doctoral**

- Illinois-CYI Agreement Dual PhD Fellowship 2020-2026  
Full funding via a joint agreement between the University of Illinois (NCSA) and The Cyprus Institute.
- Fiddler Innovation Fellowship 2020-Present  
For radical applications of computing in the arts and humanities, toward social justice
- Conference Presentation Award: DARIAH Annual Event 2025
- Conference Presentation Award: Culture and Computing (ACM KUI) 2023

**Graduate**

- Fiddler Innovation Fellowship 2017-2020
- Student Led Initiative Grant [Funded by the Student Sustainability Committee, UIUC] 2019
- Chicago Studio Award [Top architecture project in department] 2017, 2019
- Archon Studio Prize [Winning architecture project in competition studio] 2018
- CRITICAL MASS Student Choice Award [Top architecture project in department] 2018

**Teaching**

- "List of Teachers Ranked as Excellent by Their Students" 2023, 2024

**SCHOLARLY PRESENTATIONS****Invited Lectures**

- "Propositional Modeling: Participatory Visualization for the Architectural Digital Humanities" 2025  
IMMERSE Seminar Series, Center for Immersive Computing (Siebel School of Computing and Data Science), University of Illinois Urbana-Champaign
- "The Emergence of Parametricism and Computational Design in Architecture - 1960-2025" 2024  
ARCH 577 Theories of Architecture, University of Illinois Urbana-Champaign
- "Human Centered Design Research Methods in Spatial Computing and HCI" 2024  
DTX 499 Human-Centered Design & Design Thinking (Siebel Center for Design), Prof. Beth Ladd
- "C.H.A.I.N.G.E.D. and Mass Collaboration with the Haunted PS1 Collective" (with Adam Pype) presented at the Experimental Games Workshop (EGW), Game Developers Conference (GDC), San Francisco 2024
- "Digital Cultural Heritage" (with Donna Cox and AJ Christensen) 2018  
RCC/MURPA Seminar Series, invited by the University of Queensland Research Computing Centre, Advanced Visualization Lab (AVL), National Center for Supercomputing Applications (NCSA)
- "Revealing The Invisible: NCSA Expertise For The Study Of Mediterranean Medieval Graffiti" (with Mia Trentin, Cyprus Institute) 2018  
NCSA Special Seminar, National Center for Supercomputing Applications (NCSA)

**Conference Presentations**

- ”Playing Heritage in Museums: Designing for Visitors Who Know More Than You Do” presented at ITEL Future of Learning Technologies Showcase, DELTA Research Unit (College of Education), University of Illinois Urbana-Champaign, May 11 2026
- ”Constraints, Not Freedom: Designing Virtual Environments for Distributed Co-Creation” (poster/demo) presented at IMMERSE Symposium 2026, Center for Immersive Computing, University of Illinois Urbana-Champaign, April 28 2026
- ”Propositional Modeling for Digital Heritage: Committed Artifacts, Situated Knowledges” presented at Creativity in Modern Heritage: A Doctoral Symposium, University of Illinois Urbana-Champaign, May 7 2026
- ”Spatially-Distributed Narratives: Generative Ambiguity in Heritage Visualisation” presented at DARIAH Annual Event 2025: The Past, Goettingen, Germany, June 18-20 2025
- ”The Interpretive Nature of Space: Generative Ambiguity in Heritage Visualization” presented at Spaces of Nature/Natures of Space Graduate Student Symposium, University of Illinois Urbana-Champaign, February 14 2025
- ”Virtual Time Capsules: Unlocking Living Memory Through Meaningful Play in Immersive Heritage Environments” presented at 3rd International Playful by Design Conference, University of Illinois Urbana-Champaign, November 7-9 2024
- ”MetaFraming: A Methodology for Democratizing Heritage Interpretation through Wiki Surveys” presented at XX. International Culture and Computer Science Conference, 28-29 September, Lisbon, Portugal 2023
- ”REAACH-ID Symposium 2021: AI/AR For Space Recognition, Valorization, Design, Monitoring, And Management”, Sicily/Webinar, October 12-13 2021
- ”Developing Wikar: A Mixed Reality Platform for Art and Humanities Researchers”, DARIAH Open Working Group Meeting: Digital Practices For The Study Of Urban Heritage 2021
- ”Developing Infrastructure for Collective Data Management, Enabling Social Computation Research in the Digital Humanities (Wikar + ClowderBridge)”, Clowder All Paws, Urbana/Webinar, September 20 2020
- Participatory Research & Engagement**
- ”A Day at the Nicosia Airport: Participatory Heritage Interpretation Through Virtual Reconstruction,” Bank of Cyprus Cultural Foundation, Nicosia, Cyprus, November 30 2024
- ”Embracing Modern Heritage: Wiki-Surveys and Gamified Informatics for Participatory Research”, Game Studies and Design Spring Showcase, University of Illinois Urbana-Champaign, April 28 2023
- ”Patio Walk: Sharing Tangible and Intangible Heritage in Córdoba”, Dariah ERIC UDigiSH WG, Presenter, Coordinator 2022
- ”Use of ICT for community building actions towards the reactivation of urban heritagescapes in South European cities, Palermo, Italy”, Dariah ERIC UDigiSH WG, Presenter, Coordinator 2021

## TEACHING

### Classes as Instructor of Record

ARTD 218 Interaction Design Foundation, School of Art + Design, Spring 2023

### Classes as Co-Instructor

DCH 421 Community Engagement and Heritage Education in a Digital World, Dr. Georgios Artopoulos, Spring 2022

DTX 499 Human-Centered Design & Design Thinking - Multidisciplinary Innovation Studio, Prof. Beth Ladd, Fall 2023, Spring 2024

### Classes as Teaching Assistant

ARCH 577 Theories of Architecture, Dr. John Stallmeyer, Fall 2024

### Invited Reviewer

LA 5XX Future Natures, Department of Landscape Architecture, Dr. David Lyle Hays, Spring 2023

Experimental Computational Architecture, Artificial Intelligence Research Seminar, University of Stuttgart, Dr. Thomas Wortmann, Spring 2022

## ADVISING

### Undergraduate Research Supervision Kajetan Haas (Computer Science + Statistics)

2018-2019

SPIN Fellowship Program, NCSA

Supervised the development of high-performance volumetric shaders for mobile AR data visualization, leading to an exhibition at the Art & Design Fall Faculty Showcase at UIUC. The student went on to a career as a Technical Artist at Bungie Studios.

## ORGANIZATIONS

### DARIAH-EU Digital Practices for the Study of Urban Heritage WG

2021-Present

Technical Coordinator & Workshop Facilitator

Designed and coordinated technical production for international co-design workshops in Palermo, Italy and Córdoba, Spain.

Developed bespoke software and data analysis pipelines to support participatory research and field work on cultural heritage in historic cities.

### New Design Congress

2021-present

Independent Research Group, Critical Technology & Design Discourse

### New Models

2019-2021

Critical Discourse on New Media & Technology

### QUIPIT: Critical Architecture Student Group

2014-2019

Student Organization for Discussions, Workshops, Exhibitions

## SELECTED RESEARCH-CREATION PROJECTS

### Nicosia International Airport VE [Virtual Environment]

2024–2026

*A participatory virtual environment developed to test dissertation methodologies on interface-mediated, co-constructive heritage interpretation. Deployed in a public exhibition at the Bank of Cyprus Cultural Foundation, the project uses a "propositional model" to successfully scale public engagement, capturing over 3,200 play sessions and 300 oral story recordings. This method generated new qualitative data that enriches, expands, and challenges the site's limited documentation.*

### Paphos Gate Archaeological Site VR

2014–2024

*As a software developer/researcher in the Virtual Environments Lab, realized multiple interactive VR/AR/Mobile prototypes to visualize findings/digital twins of a major urban archaeology project. This work included participatory data-driven design for its final return to the city, using gaze-tracking analytics from VR user journeys to inform the final design of a public steel walkway and a permanent VR installation at the New Cyprus Archaeology Museum and an installation at the Seoul Biennale of Architecture and Urbanism (2018).*

### C.H.A.I.N. Experimental Development Series

2020–Present

*Co-Director and technical lead for a series of projects investigating methodologies for mass-scale, distributed world-building. This practice-led research explores automated pipelines for decentralized digital production with hundreds of independent developers. The series' narrative depth has inspired fan-run wikis and a TV Tropes page to document its content, and I was invited to present this work at the **Game Developers Conference (GDC) 2024 Experimental Games Workshop**.*

### Wikar [Mixed-Reality Research Platform]

2019–Present

*Lead developer of Wikar, a mixed-reality platform for humanities researchers. The software serves as reusable infrastructure for data collection and public engagement, enabling high-impact collaborations with major artists (e.g., Peter Kogler, Erwin Wurm), cities, and museums. As production lead and technical director for these projects, I applied research into spatial computing to create large-scale public art installations.*

### The Haunted PS1 Collective

2020–Present

*Founding member and technical/creative director of a DIY international game collective with over 4,800 members. My role involves designing systems for mass collaborative game development, which have enabled hundreds of artists to produce over 100 games across 12+ curated collections since 2020. These projects have received millions of engagements and are a defining influence on the modern indie horror scene.*

### DARIAH-EU Urban Heritage Workshops

2021–2023

*As technical coordinator for the "Digital Practices for the Study of Urban Heritage" working group, led the development of bespoke software for participatory co-design workshops in multiple European cities (including Palermo, IT and Córdoba, ES). The tools included AR applications and interactive web platforms for data collection, visualization, and public engagement on tangible and intangible heritage, leading to direct architectural interventions and adaptive reuses for historic neighborhoods.*

## ACADEMIC SERVICE & CONFERENCE ORGANIZATION

### University of Illinois

#### Creativity in Modern Heritage: A Doctoral Symposium

2026

Co-Chair (with Taisuke L. Wakabayashi and Kathryn E Holliday) and Web Designer. Co-organized an interdisciplinary doctoral symposium on modern heritage featuring a keynote lecture by Hi'ilei Julia Hobart (Yale) and six papers, jointly supported by the PhD Programs in Architecture and Landscape Architecture, and History + Theory + Preservation, with co-sponsors including the Unit for Criticism and Interpretive Theory, the Environmental Humanities Research Cluster, and the American Indian Studies Program.

**Spaces of Nature/Natures of Space Graduate Student Symposium**

2025

Web and Visual Identity Designer. Designed the website and visual materials for an interdisciplinary graduate student symposium chaired by Taisuke L. Wakabayashi, featuring twelve papers across four thematic sessions and a keynote lecture by D. Fairchild Ruggles (Landscape Architecture), supported by the Ph.D. Program in the Illinois School of Architecture and the Department of Landscape Architecture.

**Peer Review**

DARIAH Annual Event 2026 (Rome, Italy)

2026

**TECHNICAL EXPERTISE**

- Research Methods:** Design-Based Research, Mixed-Methods Evaluation, Participatory Design, Research-Creation, Behavioral Analytics, Human-Centered Design, Community-Engaged Scholarship, Sustainable & Archival Software Development
- Languages:** C/C++ (Performance-Critical Systems), C# (Game Engines, Interactive Applications), Python (Data Analysis, Automation), JavaScript (Web Platforms), PHP (Web Backend), GLSL/HLSL (Shader Programming), SQL (Database Systems)
- Research Infrastructure:** Interactive Platforms (Unity 3D, Godot), Spatial Computing (VR/AR: SteamVR, Oculus, ARKit), Web Technologies (Three.js, WebGL), Database & Collaboration Systems, High-Performance Computing (CUDA, MPI, OMP)
- Systems Development:** Full-Stack Web Development, Research Data Pipelines & Analytics, User Behavior Tracking Systems, Linux/Server Infrastructure, Deployment & Automation, Embedded Systems (Arduino, ESP32, Raspberry Pi)
- Design & Fabrication:** Parametric Design (Grasshopper, Houdini), 3D Modeling (Rhino, Blender), Digital Fabrication (CNC, 3D Printing, Lasercutting, Woodworking), Electronics & Physical Computing, UI/UX Design, Data Visualization, Museum & Exhibition Installation
- Project Leadership:** Interdisciplinary Team Management, Decentralized/Automated Project Workflows, Stakeholder Coordination, Technical and Creative Direction & Production