PHD STUDENTS

ARCHITECTURE + ARCHITECTURE W/FOCUS IN LANDSCAPE ARCHITECTURE

NAME	RESEARCH OVERVIEW	RESEARCH INTERESTS	RESEARCH UNIT	EDUCATION	PHD ADVISER(S)
Clarissa F. Albrecht Silveira	Clarissa Albrecht studies the relationship between architecture and landscape architecture with regard to improving balanced ecological systems. Her research is about the evaluation of sustainable performance of contemporary architecture and landscape architecture in high-density urban areas, analyzing means of measuring and interpreting building and landscape performance, bridging ecology and design, discourse and practice.	Design, nature, technology, sustainability		M.S. in Forest Science, Universidade Federal de Vicosa B. in Architecture and Urbanism, Universidade Federal de Vicosa	Ute Poerschke
Negar Ashrafi	Negar Ashrafi investigates possibilities to improve the 3D printing toolpath for construction purposes with respect to reducing material usage, energy consumption, and construction time. Addressing the limitations of current 3D printing technologies, Negar aims at 3D printing of architectural geometries with minimal to no support structure, developing a toolpath with maximum accuracy, and improving the structural behavior associated with the toolpath.	3D printing concrete, shape-grammars, sustainability	SCDC	M.S. in Architecture, Penn State M.Arch., QIAU, Iran B.Arch., QIAU, Iran	Jose Pinto Duarte
Abhinandan Bera	Abhinandan Bera investigates how the canal systems in Calcutta, India, have historically influenced the adjacent land use and changed the landscape of Calcutta since the British colonial period. His research is primarily informed by archival documents, planning reports, and maps, which will be used to produce a coherent cartographic narrative that looks at the scenario as a human-nature coupled system.	Urban morphology, socio-ecological systems, ethnography, cartography and spatial analysis	Landscape Architecture	MLA, Penn State B. Arch. IIEST Shibpur, Howrah	Charles Cole
Meher Bhagia	Meher Bhagia studies the processes involved in the production of urban space in the twenty-first century. She looks at rapid peri-urbanization of megacities in the Global South through the lenses of critical urban theory, urban political ecology and Lefebvre's theories on the production of space and 'right to the city' to decipher landscapes of socio-environmental injustice. Her work focuses on the implications of urban projects which exempt the conventional planning tools and development regulations to create new project agencies with special powers of decision-making.	Rapid urbanization, neoliberal urbanism, environmental justice, urban governance		M.Arch. in Urban Design, CEPT University, Ahmedabad B.Arch., School of Architecture, R.V. College of Engineering, Bangalore	Mallika Bose
Eduardo Castro e Costa	Eduardo investigates the different systems needed for the implementation of the mass customization paradigm to ceramic tableware, towards improving competitiveness in that sector. A generative design system based on shape grammars and parametric modeling enables designers to create customizable tableware collections. End users can customize their final design solution through a user-centered interface based on natural language. The customized solution can be manufactured via a production system supported by digital fabrication.	Mass customization, ceramic tableware, generative design, shape grammars, parametric modeling, user interfaces, digital fabrication	SCDC	Licenciate in Architecture, Instituto Superior Técnico, University of Lisbon Master in Architecture, School of Architecture, University of Lisbon	Jose Pinto Duarte

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Julio Diarte	Julio Diarte investigates new processes to transform waste corrugated cardboard into alternative construction materials addressed to the making of affordable and compact size houses. Through this research he aims to contribute to reducing the problem of increasing urban solid waste, offering low-tech solutions that could be replicable by low and middle-income communities or in emergency situations. His work focuses on designing, making, and testing different methods and tools to transform waste cardboard into possible architectural components like panels, blocks, logs, columns, or trusses, using conventional and digital fabrication tools.	Waste as a resource for architecture, sustainable architecture, low-tech architecture, construction materials design and processes, traditional construction methods, digital fabrication	SCDC	Master in Architecture, Barcelona School of Architecture, Polytechnic University of Catalonia	Jose Pinto Duarte Marcus Shaffer
Lacey Goldberg	Lacey is a PhD candidate in Architecture with a focus in Landscape Architecture. Her research looks at the visual and scenic impacts of energy industries on the Pennsylvania landscape, particularly development and infrastructure associated with Marcellus shale natural gas extraction. The goal of her work is to look at historic trends of energy extraction practices on the landscape and create from those trends predictive models that will indicate where future visual impacts are likely to occur. From that information, she plans to work with local communities to design and implement conservation measures to protect their valuable scenic and cultural amenities.	Scenic conservation, visual assessment, GIS, crowdsourced data, natural resource management, and energy landscapes.	Hamer Center	MLA, Penn State BFA, Allegheny College	Timothy Murtha
Naveenkumar Muthumanickam	Naveen Muthumanickam research interest is in the design of Multi Hazard Resilient Sustainable Buildings (RSB), specifically the integration of the various environmental, technical, social and economic aspects during the decision-making process. He investigates advanced decision-making frameworks borrowed from the field of industrial engineering as models for the complex trade-offs between these parameters. Naveen's goal is to come up with a Multiphysics engine which would allow AEC industry professionals to evaluate multiple design alternatives for multiple performance criteria (structural, thermal, acoustic, environmental) simultaneously.	Multi-hazard Resilient Sustainable Buildings (RSB), energy efficient buildings, integrated Building Information Modelling (BIM) and Building Performance Computation (BPA), Virtual Design Construction (VDC)	EEHR, Hamer Center	Master of Science in Architectural Science and Building Technology, University of Michigan, Ann Arbor Bachelor of Architecture, Anna University, India	Lisa Iulo Timothy Simpson (Mech. Eng.) Gordon Warn (Civil Eng.)
Vernelle A.A. Noel *vernellenoel.com*	Vernelle's current Ph.D. work investigates craft, computational making and technologies in cultural design practices. Her investigations seek to transform how we design, make, and develop technologies. Vernelle earned her Master of Science in Architecture Studies (SMArchS) in Design and Computation at MIT. She focused on shape grammars, digital fabrication, and investigated ways of improving design in the Trinidad Carnival through computation and digital technology. Vernelle developed a computational design tool entitled, "The Bailey-Derek Grammar", which records the craft of wire-bending in the Trinidad Carnival, and presented her work at SIGGRAPH2015	Digital fabrication, wire-bending, craft, the Trinidad carnival, computational making, and technology in cultural design practices for novel design and manufacturing processes.	SCDC	Master of Science in Architecture Studies, MIT B.Arch, Howard University	Jose Pinto Duarte
Irem Öz	İrem Öz's research interest focuses on social inequality and its architectural manifestations with respect to specific social and political components. In her masters' studies she researched the internal migratory processes from rural areas to urban cities of Turkey that has taken place after the WWII and its strong influences to transform not only the physical urban setting, but also the political, social and cultural fields. Her current research focuses on the wider phenomenon of migratory urbanism in a global context and its spatial representations with a specific focus on the Turkish guest worker migration to Germany that started in 1961 and has transformed the demographic structure, ethnic composition and spatial organization as well as causing a formation of a new layer in Germany's social structure.	Urban Sociology, Social Inequality, Migration Theories, Culture Theory and Contemporary Turkish Architecture		M.A. in Archaeology and History of Art, Koc University Bachelor of City Planning (BCP), Middle East Technical University	Alexandra Staub

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Sohrab Rahimi	Sohrab Rahimi's research looks into the question of how to best facilitate social interaction among students of postsecondary institutions. His study aims to identify the most salient environmental factors pertaining to social interaction in Campus spaces. Through this research, he uses GIS and Multitarget Tracking methods to measure the usability of different campus spaces. In addition, he uses network analysis methods to determine how the configuration of common spaces affect the usability of different campus spaces. The results of this research provides a means for architects and sociologists to better design and assess settings that will increase sociability in campus spaces.	GIS, Big Data, Urban Information Systems, Crowdsourced Data, Geo-Statistics, Socio-Spatial Network Analysis, Environment-Behavior Research, Social Sustainability, Mapping and Visualization		Post-Professional M. Arch; Master GIS (MGIS): Post-Baccalaureate degree in Applied Statistics, Penn State B.Arch, Shahid Beheshti School of Architecture and Urban Planning	Mallika Bose Clio Andris (Geography)
Mina (Vina) Rahimian	Vina Rahimian's general area of interest lies in technological and data-driven responses for solving wider urban sustainability problems. Her research focuses on smart grid/microgrids in cities, investigating how the spatial characteristics of urban form can benefit the energy performance of community microgrids. In her research, Vina will develop a computational design support tool integrating the spatial generation and [energy] performance evaluation of community microgrids. Her methodology involves a combination of computational generation-evaluation techniques, along with statistical analysis of big energy data and machine learning.	Big Data, Machine Learning, Smart Grid, Smart Cities, IoT, HCI, UI, UX	SCDC	Post-Pro M.S. in Architecture, Penn State Bachelor of Architectural Engineering (B.Arch), University of Tehran, Iran	Jose Pinto Duarte Lisa Iulo
Nastaran Tebyanian	Nastaran Tebyanian looks into computational approaches and tools to design resilient urban landscapes, including ecological analysis and social participation with the focus on bottom-up social and ecological processes.	Resilient built environments, climate change, computer-aided landscape design	Hamer Center	M.S. L.Arch. Penn State, B.A.E. Art University Isfahan	Timothy Murtha
Dario Vanegas	Dario Vanegas's research interests include developing sustainable urban environments and urban housing in Colombia. Given the fast pace of global urbanization and the challenges posed by rapid urban transformations in developing countries, the purpose of his present study is to explore the linkages between the quality of life of citizens of low-income communities and their built environment (specifically housing) in the context of Bogotá, Colombia. Using a mixed methods approach, this study will contribute to a better understanding of such relationships and the role urban housing plays in the process of transitioning towards more sustainable and equitable cities.	Sustainable urban environments, urban housing, community lead design, design as research.		M. Arch, Universidad Nacional de Colombia B. Arch, Universidad Nacional de Colombia	Mallika Bose
GRADUATED PH.D. STUDENTS					
Stephen Mainzer (*Graduated 2017*)	Stephen Mainzer's research applied a transdiciplinary perspective to identifying, comprehensively describing, and advocating for evidence-based change in human-environment conflicts. His dissertation proposed a unified model – the Community Landscape Model of Pro-environmental Behavior – across three similar, but currently disparate field theories of behavior, landscape, and community. The model was validated through a mixed-method analysis of the ways in which people interact with place and community and consume energy in their homes in two Pennsylvania towns.	Transdisciplinary action research design; human dimensions of natural resources; community and place interactions; design studio pedagogy; mixed methods landscape analysis	Landscape Architecture; Human Dimensions of Natural Resources and the Environment	Ph.D. (dual title) Architecture and Human Dimensions of Natural Resources & the Environment. 2017, Penn State, M.S. in Landscape Architecture, Penn State BLA, Penn State	Charles Cole Albert Luloff (Rural Sociology)