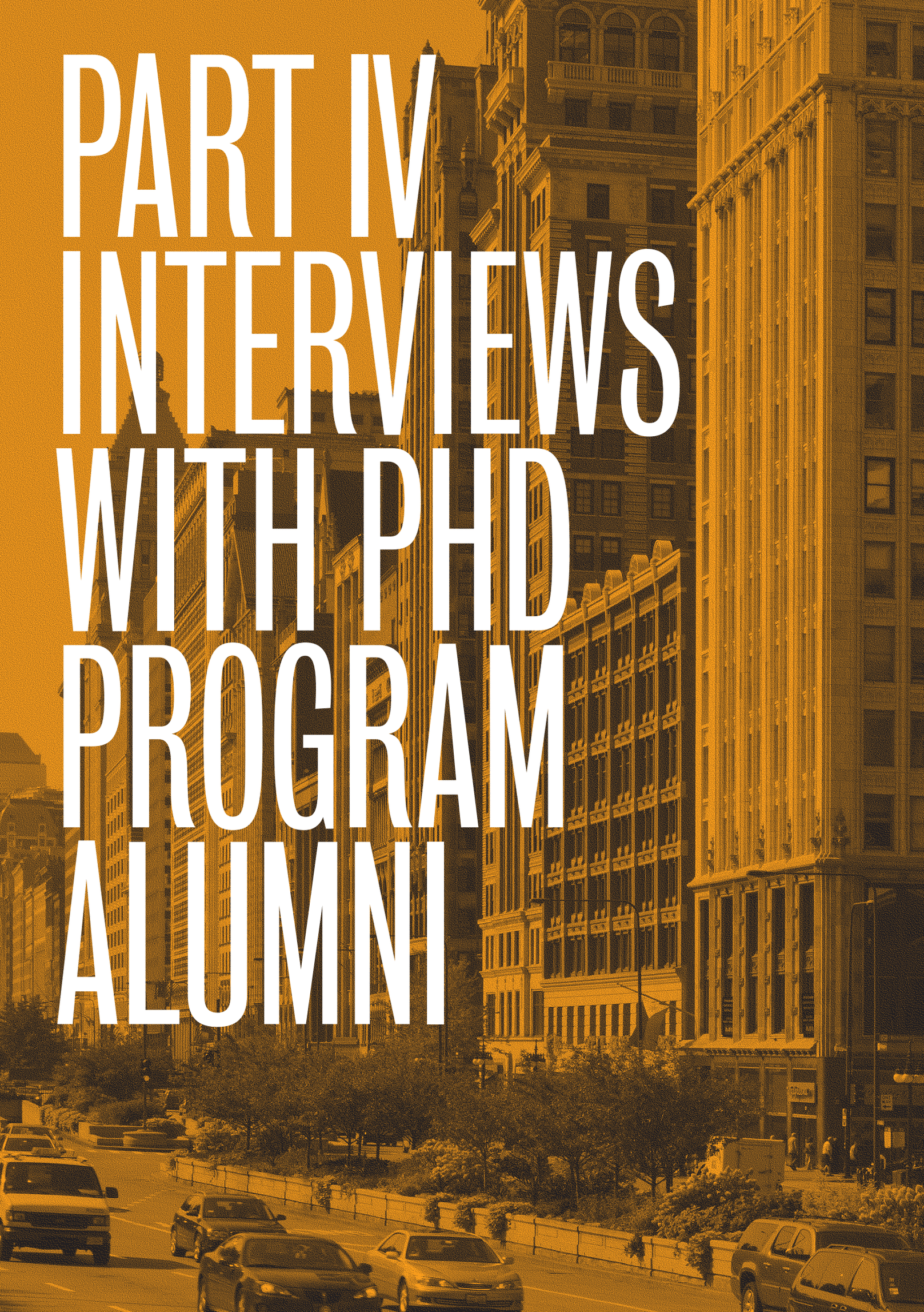


PART IV INTERVIEWS WITH PHD PROGRAM ALUMNI

View of Michigan Avenue with Chicago Cultural Center in foreground.
Photo courtesy of William Zbaren.

NARJES ABBASABADI

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[NA] A few months after I completed my doctoral degree, I was offered an Assistant Professor of Architecture, tenure-track position at UTA, beginning in Fall 2020. Currently, I am teaching at IIT as an adjunct professor, and I am in the process of transition to a new chapter of my academic career. As I'm learning more and expanding my academic community, I am so enthusiastic about joining UTA and pursuing my future academic and professional goals.

Since graduation, I continued working on publishing my doctoral dissertation, an integrated data-driven framework for urban energy use modeling. This research develops a multi-scale model that captures two main components of urban energy use, including building and transportation, and enables dynamic exploration of performance-driven design and planning. I was able to publish in several primary journals in the field. As the next step of my dissertation, I have been working on developing research proposals to be submitted to funding agencies. I have been working with institutions to apply this framework that aimed to aid decision-makers in modeling urban energy and evaluating robust theories and alternative scenarios for developing low-carbon cities. Therefore, I participated in workshop activities, including developing agendas for Chicago's Climate Action Plan through Sustainable Urban systems organized by Northwestern University, National Science Foundation (NSF), and Argonne Lab. I continued my research collaboration with IIT and expanded my collaboration with other institutions, such as serving as a faculty affiliate in WISER (Wanger Institute for Sustainable Energy Research) at IIT and collaborating with scholars in different universities. During this transition process, I continued my collaboration with the Ph.D. program and served as the editor of *Prometheus 03: Building, Cities, and Performance;* Journal of the Ph.D. program, College of Architecture, IIT.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current position?

[NA] During my doctoral studies, I received various sources of academic mentorship and learned different skills. To address my research objectives, I needed a wide range of theoretical and applied knowledge as well as programming and computation skills. I worked with multiple departments, including architecture, engineering, computer science, humanities, and urban planning and design, which helped me develop my interdisciplinary research. I explored various research methods and tools that I am expanding and applying them in my current research, and I found them very helpful in my teaching. In addition to research, other valuable skills that I acquired during my doctoral studies are leadership, teamwork, and networking, which help me today expand my professional and academic community. Professionally and along with my doctoral studies, I had the opportunity to continue my practice at AS+GG, a Chicago-based firm engaged in the design and development of sustainable architecture. This helped me better understand the gaps in the theory and practice and tried to address them in my research and teaching. So, I found all these skills helpful and influential in my today's job as a researcher, educator, and architect.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[NA] I believe the success of Ph.D. students and their long-term academic career is tied to developing a strong research foundation. This can happen through achieving a deep understanding of systematic research, literature, and theoretical knowledge and research methods in their field, and finally completing with impactful research outcomes. Attending and presenting in various academic and professional conferences is essential to ensure receiving enough critical feedback to increase the quality of their research. The transition process after graduation can be smoother with increasing their publication record and collaborations with other scholars, which will help expand their academic community and create new opportunities for success.

Dr. Narjes Abbasabadi is an architect, researcher, and educator. Dr. Abbasabadi currently serves as an adjunct professor at the Illinois Institute of Technology (IIT) and has been appointed as an Assistant Professor at the University of Texas at Arlington (UTA) beginning Fall 2020. Dr. Abbasabadi's research focuses on developing human-centered methods and tools for the design of sustainable and smart built environments and modeling of urban systems. Her work has been published in several leading journals including Applied Energy, Building and Environment, and Energy and Buildings and presented her research at many academic conferences such as the 2019 Architectural Research Centers Consortium (ARCC) (Best Paper Award Candidate); and the 2019 Rosenfeld Symposium, Lawrence Berkeley National Lab. She received prestigious awards, including "2020 ARCC Dissertation Award Honorable Mention," "2019 Best PhD Program Dissertation Award" (IIT CoA), and 2nd place in the 2018 U.S. Department of Energy's Race to Zero Design Competition. In the fall of 2018, she organized the 3rd IIT CoA International Symposium, and serves as editor of Prometheus 03: Buildings, Cities, and Performance, Journal of the IIT Ph.D. Program in Architecture. She has received several grants including the development of design codes and prototypes for low-carbon buildings. She has practiced at architecture firms, most recently as an architect at Adrian Smith + Gordon Gill Architecture, where she was involved in major sustainable projects, including the 2020 World Expo.

MATIN ALAGHMANDAN

Interview conducted by Michelangelo Sabatino, April 2020.

[MS] Since graduating, how have you developed your doctoral research?

[MA] My PhD research was about the collaboration between architecture-structure and fluid dynamics in the realm of tall buildings based on a computational platform. After graduation I came back to Iran and I have had a tall building design studio at Tehran University, and in that academic studio, I developed my research with my students. We are working on a computational platform to consider architectural parameters and structural factors of tall buildings to be analyzed, simultaneously. We published a couple of great papers in peer review journals such as *Architectural Science Review, Journal of Building Engineering,* etc. Last summer, I went to Qatar University, and, based on a funded research, we developed the platform with more funding support. The outcome of that is under review by a couple of peer-reviewed journals to be published.

[MS] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[MA] Basically, I can still refer myself to the great research methodology I learned through my PhD period at IIT and the rational method of thinking I used in that period. Based on my architectural background, I learned a lot about engineering knowledge at IIT and this still helps me a lot for guiding my current students.

[MS] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[MA] After my PhD, I heard about changing the PhD thesis subjects and areas toward more history and theory in architecture. I obviously think this area is necessary for every PhD program, but IIT is so famous for its engineering atmosphere. I think besides this area, IIT has to support engineering research in the architectural realm so it can help this program to improve more that ever.

Dr. Matin Alaghmandan holds a doctorate in Architecture in the realm of the integration of architecture, structure, and fluid dynamics of tall buildings from the Illinois Institute of Technology in Chicago. He is an assistant professor in the faculty of Architecture and Urbanism at Shahid Beheshti University (SBU) in Tehran, Iran. He also teaches at Tehran University as a visiting professor. He was the Iran representative of CTBUH from 2015. He has taught structural courses for architects and also a design studio for master students approaching optimizing the form and structure of tall buildings through the design process. He also established a practical architectural studio, TechnoArch, in 2016, and from that time, he has designed and constructed residential, office, and hotel buildings.

MOHAMMED ALKHABBAZ

Interview conducted by Michelangelo Sabatino, April 2020.

[MS] Since graduating, how have you developed your doctoral research?

[MA] I am working to turn my dissertation into a manuscript so I have been developing and expanding on chapters from my doctoral thesis. After I graduated, I taught a course on Architecture of Saudi Arabia in which I was able to introduce some of the research materials I conducted on petroleum and modern architecture in Saudi Arabia. The feedback I received from students and colleagues have encouraged me to further articulate some of the ideas I was working on. Petroleum influence over our built environment is a dynamic subject which is now receiving attention due to today's crises.

[MS] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[MA] Among many skills one acquires in a doctoral program, I think the most valuable that stand out to me now are: critical and lateral thinking, effective communication, and interpersonal/leadership skills. A university professor has many tasks that require a set of skills —teaching, research, advising, and administrative tasks—but all rely on oral/written communication skills. Critical thinking and problem-solving skills are very important to me now because I am trying to find answers to a question that I have had for while now: Architectural history discourse has been shared through traditional channels—teaching, publishing, and public speaking—are there novel channels to share the findings of our research?

[MS] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[MA] In addition to buildings a solid grounding in discipline for specific research skills, I would recommend doctoral students also strengthen their transferable skills, such as leadership, networking, and management, or public speaking. These skills are developed by participating, or organizing, and academic and social activities.

Dr. Mohammed Alkhabbaz is an architectural historian and architect based in the Detroit, Michigan metro-area. Alkhabbaz earned his PhD in Architecture from Illinois Institute of Technology. His dissertation titled "Leaping into Modernity: Architecture and Identity in Saudi Arabia 1962–1986" examined modern architecture in Saudi Arabia within the context of the country's petroleum-driven development. Alkhabbaz was a recipient of a research grant from the Canadian Center for Architecture (CCA), and a research grant from the Global Architecture History Teachers Collaborative (GAHTC). Alkhabbaz taught at King Fahd University of Petroleum and Minerals, Saudi Arabia, Lawrence Technological University, and Michigan State University.

ALIA FADEL

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[AF] Doctoral research is not a destination as much as it is a dynamic journey that I lived through and learned from. PhD is a journey of passion, dedication, hard work, pain, pleasure, and self discovery. It is an opportunity to equip yourself with the latest academic skills and teaching techniques needed to progress to the next chapter of your academic career. Therefore, my doctoral research has evolved into a novel teaching pedagogy, method, and approach to architectural and landscape architectural education and research. It has a profound impact on the way I convey knowledge and skills to my students while sharing my beliefs in the ethical responsibility to research and design for human well-being with my academic community. My doctoral research is developing into teaching a requisite number of classes and studios, formulating new academic courses, publishing journal articles, conducting research fieldwork and investigations, serving on committees, and attending conferences, which are among my current duties and responsibilities that I am honored to undertake as a faculty member at Leeds Beckett University, UK.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[AF] One of the most important skills I acquired during my doctoral studies is understanding the value of accumulating comprehensive knowledge from diverse academic disciplines related to my research field, including architecture, landscape architecture, urbanism, planning, sociology, and environmental psychology. For instance, I developed high theoretical knowledge and empirical skills in ethnographic observation-based research and design during my doctoral research and work experience at the University of Chicago's Campus Planning and Sustainability Department. As an educator, I bring my academic and practical expertise in the application of systematic observation in landscape architecture, architecture, and urbanism to my Design Studios. I teach my students to observe, capture, and systematically document the reality, complexity, and depth of their context by following certain frameworks and strategic conceptual action plans. From my teaching experience, this approach has proven successful with my architecture students at the American University in Cairo (AUC), Egypt, and my landscape architecture and planning students at Leeds Becketts University, UK.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[AF] My recommendation for future PhD students is to follow their inner passion, yet by pursuing a logical thinking approach, when they decide on their research interest and doctoral specialization. PhD students must develop their capabilities as independent researchers to take responsibility and ownership of their doctoral research. Meantime, they need to cultivate and maintain intellectual discussions with their advisors and mentors to seek guidance, advice, and support. As PhD students successfully complete their doctoral degrees, they undergo a process of transition to a new chapter of their academic career. Transition is a challenging process by nature. However, with challenges we grow as we learn more about our strengths and capabilities to create new opportunities for academic and professional success.

Dr. Alia Fadel is an educator, architect, landscape architect, biophilic design consultant, and ethnographic observation specialist. Currently, Fadel is an Assistant Professor / Lecturer in Landscape Architecture at Leeds Beckett University, UK. Throughout her academic and professional career, Fadel has received several prestigious awards, including a Fulbright Master Degree Program Scholarship, Illinois Institute of Technology Graduate Scholarship, University of Chicago PhD Cooperative Education Internship, 2018 PhD Program Best Dissertation Award, and 2019 ARCC Dissertation Award Honorable Mention from The Architectural Research Centers Consortium. Fadel's teaching and practical experience extends to include notable international universities and academic institutions in Egypt, USA, and UK.

AHMED ALI HASSAN

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[AAH] Doctoral research is a significant, non-stop learning path that requires discipline, focus, and determination. Despite the fact that graduation is the end of a PhD degree, I believe it is the beginning of a new meaningful chapter that requires constant effort and vigilance with lots of patience, persistence, and perseverance. My doctoral research typology was an applied engineering research that sought to solve energy-environmental problems in the realm of building facades' material, performance, and technology. Consequently, the field of my doctoral research has been broadened beyond being a tool for testing and proving the eligibility of my hypothetical theories about facades toward testing new facade materials/systems and assessing their performances in many real-world applications, such as at Dubai EXPO 2020 and Cairo Royal Park project 2020. By managing a thoughtful strategical trilogy process based on blending Research with Practice and Teaching, I believe I succeeded in promoting a new culture of Exploration, Examination, and Explanation among my students and fellow architects in Egypt.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[AAH] During your PhD journey, you're not just learning about your research topic and field of study. You have to learn new core skills that may qualify you to work either in academia or industry after acquiring your degree. Leadership qualities, teamworking, organizational and planning abilities, written communication skills, and public presentation techniques are some of these essential competencies that I acquired during my doctoral studies at Illinois Tech, and I find them very helpful today in my current job as an educator, researcher, and a practicing architect. As PhD students, you are trained to think clearly and systematically about a research topic. I believe observing precise details about a special phenomenon, linking facts effectively, analyzing data, articulating ideas coherently, and searching for new research-analysis methods and software packages are very fundamental to develop a professional action plan within a realistic timeline to accomplish your academic and career development goals. Accordingly, I believe developing such skills will definitely increase your chances to be selected as a prospect candidate for any job opportunity in the future.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[AAH] Albert Einstein once said, "If we knew what we were doing, it wouldn't be called research." In light of Einstein's quote, I believe that the beauty of research lies in its ambiguity, confusion, and the ability to reveal new, unexpected findings. Therefore, my main recommendation for future PhD students is to accept feeling lost in the right direction. You have to understand the ethical responsibilities of your role as a current PhD student and a prospective independent researcher. It is not merely about finding an adequate answer to a simple question but rather learning how to ask the right questions that will help in breaking new ground and paving the way to provide innovative breakthroughs with significant impacts and contributions to the society as a whole and the scientific community in particular. Throughout history, the majority of great inventions and breakthroughs by world-renowned scientists were both accidental and unintentional. During the course of their research and despite the massive feeling of desperation, these notable scientists had a creative mindset that considered difficulties as new opportunities to explore unprecedented routes. Thus, it is very important for PhD students to realize that a PhD is a marathon that requires patience, persistence, ongoing evaluation, and redirection along the way. So, don't be afraid of getting lost en route as long as you are capable of readjusting your direction toward a new path that often leads to a unique destination.

Dr. Ahmed Ali Hassan is an educator, researcher, architect, lighting designer, and facade consultant. Hassan is an Assistant Professor in the Architectural Engineering Department, Helwan University, Egypt. He is also an Adjunct Professor in the Architectural Engineering and Environmental Design Department, AASTM-RIBA University. Professionally, Hassan is the Director of Design, BIM, and Sustainability at Progressive Architects. He is a former facade consultant at ASGG Architecture, USA. Throughout his career, Hassan has received several prestigious awards and honors, including a Fulbright Scholarship, ARCC King Medal for Excellence in Architectural + Environmental Design, IALD-Schultz award, and the Egyptian Syndicate of Engineers Certificate of Excellence.

HYESUN JEONG

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[HJ] While continuing to expand my research into various sub-topics, my priority was to publish a dissertation as a single-authored paper. After refining and revising the manuscript, I was able to publish it in one of the top journals in the field of urban studies. Publication helped me a lot in getting a tenure-track faculty job as well as growing my research in collaboration with other scholars around the world.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[HJ] I think exploring a wide range of literature and knowledge helps a lot in growing the interest and capability in research in different topics. During my PhD, I worked with an architect, planner, sociologist, and historian at both IIT and another institution—University of Chicago. As a person who was trained as an architect, I had to learn different skills from statistics, GIS, programming, and theories underpinning the fundamentals. Interdisciplinary work can be challenging but definitely helpful to build a desirable portfolio of your research as many universities are looking for those who have experience in multidisciplinary research.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[HJ] As the number of PhDs is growing, there is more competition for jobs after graduation. Often, luck can be a factor in the job market as well. In order to prepare for a long-term career, having many different (and alternative) options is critical in a transitional period after graduation. Teaching as an adjunct or working as a postdoc in another institution would be a good experience to build your career. However, developing the research is still considered to be the priority even in such a transitional period. Good publication record, teaching, and other experience can help your CV become more desirable. If you want to work as a practitioner, you can also try to find an architectural firm where your research can be valued in their projects.

Dr. Hyesun Jeong is an Assistant Professor of Architecture at the University of Texas at Arlington (UTA). She received her PhD from the Illinois Institute of Technology, and lived and worked in Chicago for 15 years. She worked at the University of Chicago as a postdoctoral researcher and worked at design firms in Chicago, Paris, and Seoul. Dr. Jeong's interdisciplinary research is committed to developing sustainable and pedestrian-oriented urbanism for economic and cultural growth of communities. Her study shows the role of art and bohemian culture in walking, bicycling, and transit use in the cross-national context of U.S., France, and Korea through data analysis and ethnographic studies. Her other recent paper studies "Main Street" as a model for walkable, socially-diverse urbanism. At UTA, she leads a research-based design studio where students actively identify problems through spatial mapping analysis and use them as design hypotheses in the context of Dallas-Fort Worth.

KRISTIN JONES

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[KJ] Since graduating, my classroom continues to be a realm for developing ideas stemming from my doctoral research. I have had multiple opportunities to develop my research; a forthcoming book based on my dissertation, provisionally titled *Aesthetics in Architectural Education: Visual Training from Bauhaus to IIT,* as well as related topics in journals and conference papers, and exhibits. I have also had the pleasure to serve on a couple of PhD research advising committees which have enriched my research background.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[KJ] The most valuable skill I acquired was independent judgment. Also valuable were the general ability to conduct research in my area and a healthy respect for original sources and ideas. Beyond developing the ability to think and write, the ideas I investigated and grappled with during my studies helped me to develop my own ideas and clarify my aims as an architect and educator.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[KJ] My recommendation for PhD students is to take the time to become a leading expert on a topic of great personal interest. Engage the experts as your advisers. Make friends and colleagues during studies, and collaborate with others who share research interests. After graduation, look for and be open to all kinds of venues to give voice to your ideas, but remain true to yourself and be selective.

Dr. Kristin Jones obtained her B.Arch and PhD at Illinois Institute of Technology. She has been Adjunct Professor in the College of Architecture at Illinois Institute of Technology since 2006. She has been Principal at Studio Integra, Ltd. since 2003 with experience in commercial, residential, and educational projects. Previous firms include OWP/P Architects (now Cannon Design), De Stefano + Partners, and Holabird and Root. She has been a Board Member of the Mies van der Rohe Society since 2019. She has had research published in *Enquiry: The ARCC Journal for Architectural Research* (2016), and conference papers in "ACSA/EAAE Teacher's Conference," Antwerp, 2018, and "EAAE-ARCC International Conference," Valencia, 2020 (forthcoming). She has also been involved with exhibits for the Mies van der Rohe Society, Chicago, in 2018 and 2019.

GILBERTO OSORNIO NIETO

Interview conducted by Michelangelo Sabatino, April 2020.

Dr. Gilberto Osornio Nieto is a senior CFD Engineer for Buro Happold Engineering. He has more than six years of experience in building performance design consultancy. He is a consultant for building physics computational analysis, including thermal comfort, airflow design, energy consumption, and wind analysis. He has eight years of experience as an architecture lecturer and 11 years in architectural practice. He received his PhD in energy-conscious technologies at Illinois Institute of Technology, Chicago. He is a consultant for Global Firms including: HOK, Gensler, Perkins+Will, SHOP, Snøhetta, Zaha Hadid Architects, Foster +Partners, Adjaye Associates, Diller Scofidio + Renfro, Pelli Clarke Pelli Architects, and others.

[MS] Since graduating, how have you developed your doctoral research?

[GON] Since graduating, inside Buro Happold, I have contributed to the development of CFD modeling methodologies, including more accurate processes to simulate the thermal radiation fraction of the body in an internal comfort assessment. The development of a comprehensive CFD external comfort model utilizing Universal Thermal Climate Index, including thermal energy, radiation, moisture, and wind profile. In general in the physics consultancy practice, I have developed more effective and efficient ways to solve problems and design advice using CFD environments. I have also participated in expert meetings for the development of London Wind Pedestrian Comfort Assessment Guidelines that are being extended to the whole UK now. And currently, we are working with other consultants to develop the London External Comfort Guidelines.

[MS] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[GON] During my PhD, I was able to expand my knowledge in building physics, thermodynamics, HVAC systems, and building codes and standards. I was able to be guided by mentors who taught me energy modeling and microclimate calculation methods. I apply this knowledge in my everyday work, and I was able to expand it and continue updating it through institutions like CIBSE and ASHRAE. It is peculiar that a course I have taken out of curiosity in structural design for tall buildings has been quite useful to the wind tunnel assessments I have managed in the past five years. I never thought this course was related to my research, however, it was very useful in the end.

[MS] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[GON] I definitely would recommend building their research on top of another one previously carried out. Look for courses in different departments that are useful for their purposes (i.e., social sciences, engineering, psychology, environmental etc.). I recommend finding their niche and their area of interest as soon as possible. Make a comprehensive study of the program professors and their publications. This will give the prospect a good idea of the possibilities and knowledge gaps within the field. Have a great attitude and curiosity, and in general, enjoy the experience, because once back at work the timeframes get shorter.

ANDRÉS PINZÓN

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[AP] In my doctoral dissertation, I investigated the thermal comfort of residential buildings. After graduating, I have expanded my knowledge on passive and low-energy architecture. Particularly, I have been immersed in the making of high-performance buildings according to climate-specific standards. It has given me a deeper understanding of how to attain comfort with less energy consumption and without compromising future generations.

[MA] What are the skills that you acquired during y our doctoral studies that are most valuable today in your current job?

[AP] During my doctoral studies, I acquired analytical skills such as data mining and metrics interpreting. These were possible though attending classes on Building Sciences and Energy in Architecture, being involved in interdisciplinary projects at IIT, and participating in a research internship with a Chicago-based green building organization. These experiences have allowed me to go one step beyond in my academic and professional career.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[AP] I strongly recommend students at the PhD in Architecture at IIT make sure that the doctoral experience enriches a continuous communication with colleagues, professors, and other members of the academic community. This will bring a more conscious approach to a research problem, a more scientific exploration to solve it, and more relevant results.

Dr. Andrés Pinzón is an architect, scholar, and the co-author of the books *Luz / Materia* and *Predimensionamiento.* In his career, he has been exploring efficiency of daylighting in architecture and thermal comfort in naturally ventilated buildings. His novel work has been funded by various institutions, such as Fulbright, Universidad Los Andes (Bogotá, Colombia), Passive House Institute U.S. (PHIUS), and Illinois Institute of Technology. Besides his multicultural education and academic career, he has also practiced in New York, Chicago, and Bogota, Colombia. Currently, he is working as a research associate and building certification member at PHIUS in Chicago.

CYNTHIA VRANAS OLSEN

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[CV] My dissertation, completed in 2017, entitled "The Palais Garnier: Toward an Architecture of Dance and Music in XIX Century France" was submitted and is being considered for publishing. This research has provoked further analysis and participation in seminars, lectures, and events related to the subject of the interconnection of the arts to architecture. I continue to evaluate future investigations and applications that take my research from historical to current scientific applications.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[CV] Most valuable skills acquired (beyond endurance), have been recognizing the value of archival material and knowing how to disseminate it. Honing techniques involving research, analytical thinking, and writing have enhanced [my] current directorship role in the university and architectural practice.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[CV] Advice to current PhD students includes encouraging them, knowing that an advanced degree at any stage in practice or teaching is important and recognizing the value of this credential comes with experience. Developing these skills and not being thwarted by the oftentimes tumultuous nature of the profession of architecture is key. A multifaceted approach as a generalist and a specialist has been beneficial in my experience.

Dr. Cynthia Vranas Olsen is a licensed architect, interior designer, and educator who has extensive training in classical ballet, piano, and Greek language and culture. Her studies included course work in London with the University of Notre Dame and in Paris with Illinois Institute of Technology while completing her Master of Architecture. Vranas taught at Harrington College of Design and was appointed Associate Dean. She has worked as an architect at Murphy/Jahn and became a principal in Olsen/Vranas Design and Build where she continues to practice. Vranas completed her PhD at IIT in Architecture with an emphasis on History and Theory. She defended a dissertation entitled "The Palais Garnier: Toward an Architecture of Dance and Music in 19th Century France." Olsen/Vranas' professional work has been published and received numerous awards including a Landmark Award for Preservation Excellence—New Construction from the City of Chicago, Office of the Mayor. Currently, Vranas holds the position of the Director of the Mies van der Rohe Society, an IIT based organization devoted to preserving the legacy of Mies—his philosophies, buildings, and campus at IIT.

DANIEL JOSEPH WHITTAKER

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] Since graduating, how have you developed your doctoral research?

[DJW] Since graduating, I have expanded my Chicago-based doctoral dissertation to further pursue new links to the 1933 Century of Progress International Exposition—including Chicago industrialist, Victor Bendix, and his brief habitation of the former Potter and Bertha Palmer castle (designed by Cobb and Frost, no longer in existence) that once graced 1350 Lake Shore Drive.

[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current position?

[DJW] While undertaking my doctoral research at Illinois Tech, I learned to always search for a diverse set of archival and data repositories to pursue research objectives—to ensure that reliable information was collected. This habit turned out to be extraordinarily useful to continue practicing while transitioning into both the job search and, later, composing comprehensive course learning objectives.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[DJW] I recommend future Illinois Tech Architecture PhD students attend as many professional technical conferences as possible in order to first observe how their future professional peers collect, present, and disseminate their research—and secondly, to improve their understanding of how to maximize knowledge and skill transfer via multiple sources of academic mentorship.

Dr. Daniel Joseph Whittaker is a Senior Lecturer in the Architecture Sustainable Design (ASD) program at the Singapore University of Technology and Design (SUTD). He is currently teaching an undergraduate History, Theory, and Culture course as well as a Daylight and Electric Lighting seminar—where students research, design, and fabricate a functional architectural luminaire. These student-built lighting prototypes are created using the latest laser-cutting and additive printing technologies. Whittaker also advises a select group of graduate students focusing on adaptive reuse design strategies, while engaged with their final thesis projects, pursuing their Master of Architecture degree at SUTD.

MAGED ZAGOW

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

Dr. Maged Zagow is an entrepreneur, educator, Egyptian- and U.S.-licensed architect, urban planner, NCARB-certified, LEED AP certified, PhD holder, and MBA candidate with leadership skills developed through 15 years of diverse international experience providing design and technical solutions for large-scale residential, educational, healthcare, and mixed-use projects. His commitment to improving the built environment has resulted in receiving national and international awards for design excellence.

[MA] Since graduating, how have you developed your doctoral research?

[MZ] I moved to Egypt for good. I am a lecturer at Tanta University. I choose to help my country and transfer my academic and professional experience. I focused on getting funds for my research. I won a grant of 200,000 euro from DAAD (German Academic Exchange Services) with a collaboration with Technical University of Berlin and Mansoura University, Egypt. The grant is for two years of collaboration in enhancing academic curriculum for undergraduate and graduate studies, and to build capacity and mobility exchange. Moreover, I won a grant of 60,000 euro from DAAD (German Academic Exchange Services) with a collaboration with Technical University of Berlin and Mansoura University, Egypt. The Grant is for six months of a collaboration with Hafencity University Hamburg, University College London UCL, and Mansoura University in Egypt. This grant is to understand German and Egyptian cities through artificial intelligence. Moreover, I won a grant of $250,000 from Tanta University to fund a fabrication lab with a robot arm, and it will be established in July. Also, a joint project with American University in Cairo to document Egyptian Architects practice through short movies. Furthermore, I am working on a joint master's program with one of the best architecture schools in the UK. All these activities are supporting my research, and help to support my research team to conduct their research and open new research fields.

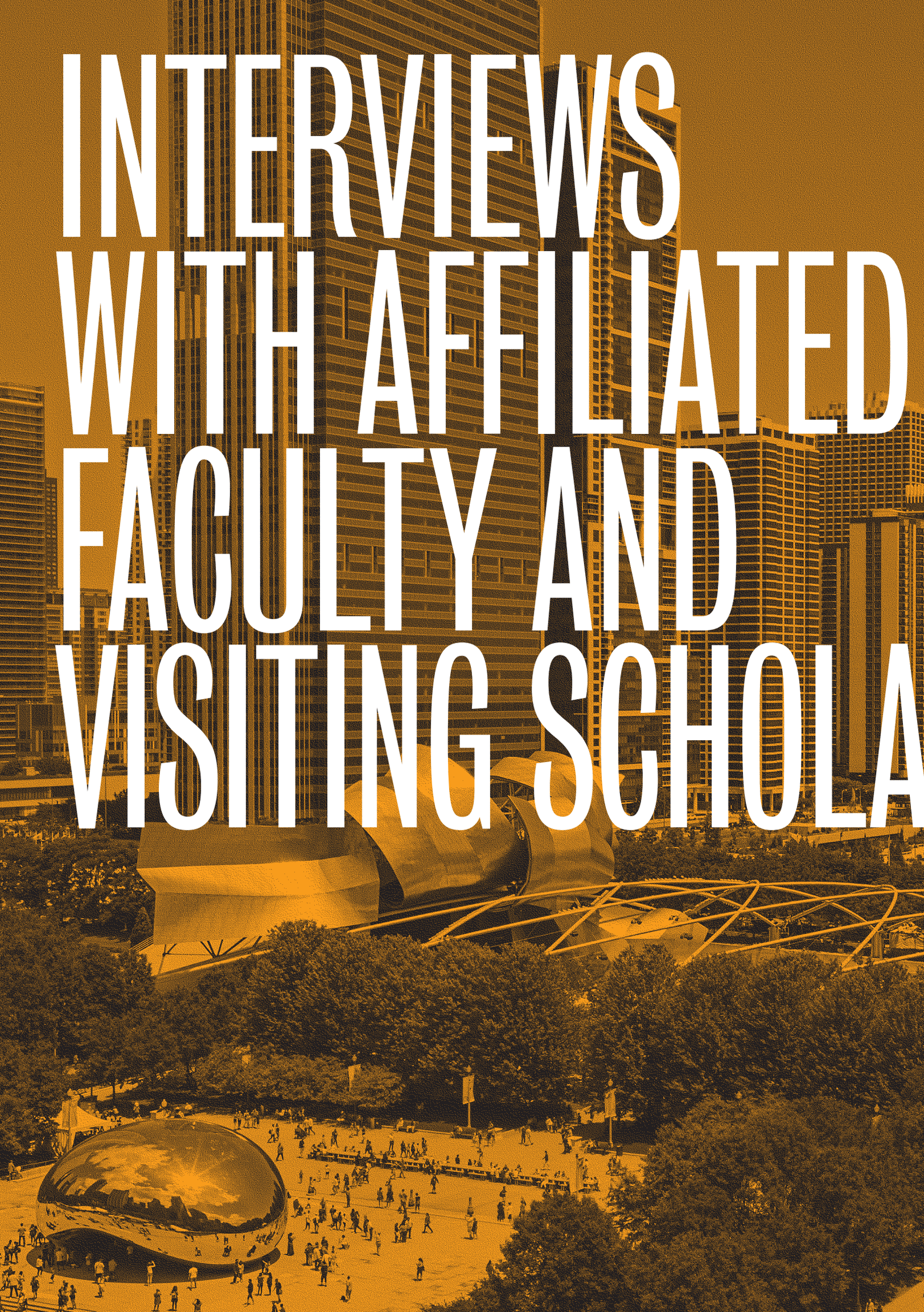
[MA] What are the skills that you acquired during your doctoral studies that are most valuable today in your current job?

[MZ] Writing proposals, setting up budgeting, networking, and seeking new knowledge.

[MA] Do you have any recommendations for future PhD students about making the most of their studies and during the transition period after graduation?

[MZ] 1) Study carefully how to write a research project proposal. 2) Keep contacts with the industry. 3) Create connections with other specialists in your field. 4) Work-life balance.

INTERVIEWS WITH AFFILIATED FACULTY AND VISITING SCHOLA



View of Millennium Park with Cloud Gate and Jay Pritzker Pavilion. Photo courtesy of William Zbaren.

PENG DU

Interview conducted by PhD Candidate Ezgi Bay, March 2020.

Dr. Peng Du is a Visiting Assistant Professor at Illinois Institute of Technology and Vice President of Academic Affairs & Strategic Partnerships for the Council on Tall Buildings and Urban Habitat (CTBUH).

[EB] You are an architect by education. After graduating from the IIT PhD Program, you have been teaching. Also, you have been working with the Council of Tall Buildings and Urban Habitat. Existing literature has drawn attention to climate change, global warming, and energy use in urban areas. Please share with us, based on your experience, what aspects you consider more important in the future of cities?

[PD] With more than a million people moving to urban areas every week, and the global population projected to be 70% urbanized by 2050—set against a backdrop of extreme environmental challenges relating to climate change and resource depletion—cities are facing profound challenges for substantial portions of their citizenship. Now is the time to rethink the way cities are planned, built, lived in, and maintained. We really need to aggressively and collectively fight for climate change and achieve net-zero at both building and urban scales, including reducing both operational carbon and embodied carbon. This brings mass timber as an important material for future buildings and urban infrastructures.

We should be trying everything we can to achieve zero carbon by 2050, but is that enough? What will happen after 2050, when there will be a significant population older than 65? Architects and urban planners must also seek solutions to meet the growing demand for wellness, a high quality of life, connection to nature, and the environment around us.

[EB] The PhD program's 4th annual symposium emphasized the multiple scales of environmental problems. How can vertical urbanism be integrated in a harmonious way with other typologies to achieve a more sustainable development? And what topics do you think doctoral research in architecture should address?

[PD] CTBUH is committed to advancing sustainable vertical urbanism, in which "sustainability thresholds" for cities become an interesting topic in terms of the urban density and building height. We always talk about vertical dense cities that should be more sustainable than less dense, horizontal settings like suburbs. However, the question is "What is an ideal density and height, if that exists?" "What are sustainable densities, urban forms, and building heights in different locations in the world in terms of energy, infrastructure, urban mobility, economy, etc. that are all connected to people's life?" When we talk about zero carbon and climate change, we also need to make our cities reflect the local histories and cultures rather than only achieving energy targets. I think that it would be really interesting to answer the question: "What is the best density for energy and carbon reduction, and what is the best density that benefits people's quality of life in the same location, and are these two densities different?" I believe that the topics related to energy, urban mobility, and health will be the focuses for the future city research.

ZAIDA GARCIA-REQUEJO

Interview conducted by Michelangelo Sabatino, March 2020.

[MS] How did you gradually frame your doctoral research topic?

[ZGR] My starting point was based on my interest in the relationship between Mies van der Rohe and structural engineer Frank Kornacker. This topic took me to Chicago as a fundamental point to continue to do research at IIT. There I had the opportunity to meet Professor Michelangelo Sabatino who introduced me to Professor Mahjoub Elnimeiri. Professor Elnimeiri became my third advisor and his personal experience in the graduate program in architecture was key to expanding the topic.

[MS] Did it change after your stay at IIT as a Visiting Scholar?

[ZGR] Definitely. It would have been impossible to focus on the research carried out within the IIT classrooms from Spain. Not only the research here but the personal interviews with people close to Mies, Frank Kornacker, or Myron Goldsmith were essential.

[MS] What were the most useful discoveries you made during your time at IIT?

[ZGR] One of the findings that I appreciate the most, in addition to the master theses themselves, are the images of the yearbooks and the description of the curriculums in the academic bulletins.

[MS] What is your most memorable experience during your time in Chicago?

[ZGR] Doing research is a lonely and hardworking process sometimes. The best memory I have is the opportunity that the IIT team gave me to be part of it. The help provided by the faculty and by the doctoral students were essential to carry out the research.

Figure 1: Images of the different classes at the Armour Institute of Technology, including the Art Institute of Chicago's architecture classes in the attic. *Cycle*, 1940. (University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology.)

Dissertation: "Mies En El IIT: Conexiones Entre Docencia Y Arquitectura."

Dissertation Abstract

Ludwig Mies van der Rohe brought his experience as an architect into the classroom, first as director of the Bauhaus school, and later at the Armour Institute of Technology in Chicago, when he took over the Department of Architecture in 1938. Mies accepted the post of director on condition that he could reshape both the undergraduate and graduate curricula to reflect his architectural ideals. Soon the classrooms became a laboratory of ideas where he could reflect on his own concerns and try out new solutions. And so, exploring Mies' architecture from the perspective of architectural education provides an alternative way to understand his legacy.

This research proposes a study of the existing parallels between professional practice and teaching in the figure of Mies from one of the most outstanding variables of his architecture: structure. To this end, an analysis is made of the relationships between structure and architectural space in the master's degree theses supervised by him in the graduate program, and they are compared with his built work, thereby establishing the influence and importance that teaching, thought, and work had on Mies' architecture.

Dr. Zaida Garcia-Requejo obtained her B.Arch. and PhD from University of A Coruña. She is a part-time professor in Architectural Composition at the Architectural Projects, Urban Planning and Composition Department (UDC). She is also a visiting scholar at Illinois Institute of Technology, Art Institute of Chicago, Museum of Modern Art (MoMA), and University of Michigan. Since November 2019, she has been Vice Dean and International Academic Coordinator for A Coruña School of Architecture.

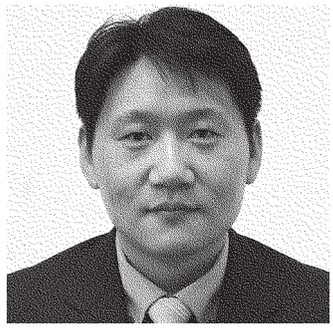
She has also been editor-in-chief for *BAc Boletín Académico* (UDC) since November 2019. She has had research published in *EN BLANCO* Journal (2018), *ZARCH* Journal (2018), and *BAc Boletín Académico* (2019). She has written the papers "Chicago Schools: Authors, Audiences, and History" (IIT, 2017), and "Mies Van Der Rohe. The architecture of the city" (PoliMi, 2019).

Figure 2: Images of different classes at Illinois Institute of Technology, including the architecture classes in Alumni Memorial Hall. *Integral,* 1950. (University Archives and Special Collections, Paul V. Galvin Library, Illinois Institute of Technology.)

Dissertation: "Mies En El IIT: Conexiones Entre Docencia Y Arquitectura."

DONGHOON LEE

Interview conducted by PhD Candidates Mehdi Ashayeri and Ezgi Bay, January 2020.



[MA] [EB] As an associate professor in the college of architecture, please share with us what sort of challenges did you find in framing interdisciplinary PhD research in architecture? And what kind of opportunities did you think that PhD research work in architecture can provide for practitioners?

[DL] Architecture is a vessel that contains human behavior. Without understanding human activity and its social system, an architect cannot provide solutions for human life. I guess it would be meaningful PhD research work if the researcher touches some social issues in our daily life and finds some solutions from the aspect of architecture. In that sense, sustainability, urban regeneration, or crime prevention may be the examples of a useful keyword for social issues.

[MA] [EB] You have done research on transportation and pedestrian environments. How do you think the role of architectural design is enhancing the quality of the outdoor realm in the early stage of the design? And how can PhD research address this?

[DL] Architects are generally interested in the indoor space. They usually have no time to think about the outdoor space and pay little attention to enhance the quality of the public realm. I think the first stage of architectural design should start from considering how to establish a relationship between architecture and its surrounding environment. Architecture exists in the urban context. If it has no relationship with the public realm, it will be isolated. PhD research should consider the influence of architecture to the surrounding environment. If the researcher finds some interrelationship between architecture and society, it would be valuable.

Dr. Donghoon Lee is an Associate Professor of Architecture at Seoul National University of Science and Technology. Lee's main research interests are architecture and urban design that correspond to social needs. He studied architecture at Yonsei University and holds his master's degree and PhD from the University of Tokyo. He served as Visiting Scholar in the PhD Program of the CoA from 2019–2020.

[MA] [EB] From your experience as Visiting Scholar at IIT College of Architecture, what aspects have been important for your research on transportation and pedestrian environments?

[DL] I was curious about the city of Chicago where the 'City Beautiful Movement' has begun, and the legacy of famous architects such as Mies van der Rohe and Frank Lloyd Wright remains. I have lived in a downtown area near Michigan Avenue. I usually went out to Millennium Park or the Riverwalk with my family on weekends. Walking along the streets or riversides to the major attractions in Chicago's downtown area was very convenient and pleasant for me. Public spaces in Chicago are well-organized and maintained. There were a variety of events on weekends throughout the year. People can enjoy the historic cityscape while walking along the street or resting at the public spaces. It was such a good experience for me to know that living in a city core area could be an excellent way to understand the city.

[MA] [EB] What is similar or different between the education in urbanism at Seoul National University of Science and Technology and the one at IIT College of Architecture?

[DL] I had a chance to participate in studio review for urban design at IIT. The students' works were full of imagination and the quality of the final presentation was excellent. I am in charge of the urban design studio at Seoul Tech. I request my students not only find design solutions but also to think about how to implement the proposed project. Because without an implementation plan, the project will remain as a fantasy. One more thing that is important for urban design is how to involve the community because without the cooperation with the community, the project cannot be successful.

[MA] [EB] You wrote books on public rental housing and the strategies for supply. If there is a gap between rents and incomes how do you think low-income groups are able to stay in their units? Do you think it is important to provide sustainable built environments for these groups when solving the housing problem?

[DL] Low-income groups are also members of society. They do their own work to maintain the society. If they cannot live in the city, no other man can replace their position. That's the reason why the public body supplies public housing for low-income groups and make up for the gap in the rent. Sustainable built environments would be good solutions to reduce their living expenses and, as a result, help them to move into better housing.

[MA] [EB] Urban renewal policies are changing in different countries. Could you tell us your opinion about the model that provides ownership for people instead of public rental housing?

[DL] Ownership of public housing may have a positive influence on the people who live there. They will have affection for where they are living and try to improve the built environment and participate in the maintenance work. But it is not appropriate to give it for free. The possible owner of the public housing should participate in the process of construction or contribute to the maintenance of the property to some extent.

BRENT R. STEPHENS

Interview conducted by PhD Candidate Mehdi Ashayeri, March 2020.

[MA] How do you see that future research in architecture integrated with applied sciences can address urgent challenges related to climate change and benefit both local and global societies?

[BRS] People make decisions on a daily basis that affect how we use energy, which in turn impacts the environment and the economy. Architects and engineers have to pursue a better understanding of the human influence on these challenges—for example, how and why people make decisions or respond to changes to their built environments. Architects and engineers also have to understand the limits of available technologies (and potentially the limits of technology more broadly). If we think that technological solutions are going to lead the way in mitigating these grand challenges (take novel materials as an example), then architects and engineers need to help turn technological developments into practical applications. So, architecture needs to work with engineering, who needs to work with the physical sciences to scale technological solutions. And if we think that there are limits to technological solutions (which I think there are), then architects and engineers need to better understand how to influence people to make better decisions, including building owners, occupants, and at a higher level, standards organizations and policymakers.

[MA] What are some current challenges that you think doctoral research in architecture and engineering should address?

[BRS] Architects and engineers design and build buildings for people—we can never forget that. I think that every Architecture PhD student (especially those in the technology side; perhaps not those who are focused on architectural history or criticism) should have an interdisciplinary lens through which they look and have an interdisciplinary committee of advisors, ideally from architecture, engineering/physical sciences, and social sciences (e.g. psychology). To me this three-pronged approach is useful and reflects architectural practice, where architects are project managers more often than not, coordinating among different trades and disciplines to get a project done successfully. So architects have to know a little about everything. I see architectural research going in the same direction to be truly successful—how can I integrate some technological solution to an architectural problem and how does it affect people? If you look at only two of those aspects rather than all three, you end up with an incomplete picture.

Dr. Brent R. Stephens is an Associate Professor and Department Chair in the Department of Civil, Architectural, and Environmental Engineering (CAEE) at Illinois Institute of Technology, where he also directs the Built Environment Research Group (BERG; www.built-envi.com), which includes undergraduate students, graduate students, and postdoctoral researchers conducting research on energy efficiency and IAQ in buildings. He is an expert in residential indoor air quality (IAQ) and building science, with over 10 years of experience performing energy and IAQ field assessments, and developing and applying models for energy use, IAQ, health, and economic impacts of IAQ. Dr. Stephens has received over $3.3 million in external research funding as PI or co-PI on over 20 projects. He has advised several doctoral students in the Technologies of the Built Environment specialization area within the PhD in Architecture program at IIT.

[MA] What do you think the emergent areas of research within the field of building science and technology are?

[BRS] Going back to the idea that architects and engineers design and build buildings for people…one key emergent area is understanding the influence of our built environments on human health, performance, and productivity. The field has spent years pushing for energy savings and has finally made traction in the last 10–15 years, but only recently has there been a stronger push for also providing better indoor environments for the very people that live and work in our buildings. I think this is in part because we're finally understanding collectively that indoor environments can impact human health, performance, and productivity, and because some seminal research has been published in the last several years that shine a light on this. With this in mind, I also think another emergent area of research in these areas is in building useful tools for the industry that advance us forward. For example, energy modeling used to be a boutique tool; now it is nearly a commodity in every architecture and engineering shop. After that, computational fluid dynamics (CFD) tools were a boutique tool (and to some extent still are), but now architecture and engineering shops are learning how to use them to provide value to projects and communicate results to decision makers. What's next? If we know that improving ventilation rates in buildings positively affects outcomes like absenteeism, productivity, and collective societal health, then should we have commodity software tools that predict these outcomes for different building designs too? If we know that aspects like occupant activity and particle filtration systems in buildings affect the transmission of infectious disease through airborne and fomite routes, should we be providing software tools for modeling this too as part of the typical architecture and engineering design workflow? I could certainly see a future where this kind of modeling becomes routine for certain projects.

[MA] Where do you see overlaps between doctoral research in engineering and architecture and what are similarities and differences in research methods for PhD students in these two disciplines?

[BRS] I think it depends on what area of study one is pursuing in architecture. Even on the technology side, students often don't have the same background in math, science, and statistics as engineers, so they have to figure out how to overcome that or at least how to work around it. I think we also do things very differently in terms of our workflow and approaches. In engineering, we don't "waste time" writing big dissertations that read as a book; rather, we tend to focus on writing papers, getting them published in peer-reviewed journals, and compiling our dissertations as a compilation of papers with some wrapper material to bring them together. It's more efficient that way and helps get our work out into the world. Architectural dissertations tend to be quite the opposite. So, our approaches and expectations are different in their fundamental approaches. At the same time, we can still use the same experimental and simulation tools to measure and model relevant aspects of the built environment.

[MA] How might educators best guide and prepare graduate students toward impactful research outcomes?

[BRS] I think we have to set very clear expectations for students: Highlight existing literature that we seek to build upon and, to an extent, imitate (for example, I have a list of 20 papers I think every student in my research group should read when starting out: http://built-envi.com/20-papers-every-berg-student-should-read/); and students need mentoring all along the way, including help in formulating good research questions and methodological approaches that are also manageable and likely to lead to successful outcomes, help in written, oral, and visual communication, and help navigating the academy or industry they wish to pursue.

[MA] What are the opportunities for the collaboration of engineering and architecture?

[BRS] There are plenty of opportunities between us, but we also need to better understand how they are different and what our strengths and weaknesses are so we can set reasonable expectations for each. Better understanding of how architecture affects human health and productivity is an area where engineers sometimes lack for ideas, but we don't lack for methods and approaches to answering the technical components of these questions; therefore, we can work with architects to ask creative yet relevant questions and with social scientists to apply appropriate methodologies for understanding the human impacts of whatever intervention we introduce. To me that is the holy grail for collaborating between engineers and architects—harnessing our differences and aligning your strengths with our weaknesses and vice versa to answer our most challenging questions.

MARIA A. VILLALOBOS HERNANDEZ

Interview conducted by PhD Candidate Mehdi Ashayeri, April 2020.

[MA] As an assistant professor of landscape architecture and urban planning with close collaboration with the Architecture program, you mentor many students and lead research projects in the area of built environment at IIT. How do you see that future research in architecture integrated with landscape architecture and urban planning can address urgent challenges related to climate change and benefit both local and global societies? What are some current challenges that you think doctoral research in architecture and landscape architecture should address?

[MAVH] In thinking both of the future of interdisciplinary research and the potential challenges ahead, I always think about how to address epistemological differences across knowledge cultures better. My questions emerge from the need to address devastation and autocracy, and a sense of enthusiasm toward nature and culture in the tropics, especially in Latin America. There, knowledge is neither rational nor emotional; it is, if anything, a coalition of grounded cosmical actions. Therefore, some of the challenges that I think about include:

— The biological, cultural, and programmatic connectivity across scales not only of space but also of time;
— The evolving characteristics of the moments of legibility and pedagogical intensity in the urban landscape;
— The biological and morphological structural diversity of the city as a mechanism to address unsustainable homogeneous spatial patterns;
— The type of performative management strategies beyond autocracy;
— The materialization of physical and programmatic flexibility in a project to allow for transformative spontaneity/no need to control it all;
— The possibility of nonlinear implementation, design, or financing;
— The capacity of representation tools to metamorph and move away from hyper-realistic representation techniques;
— The development of immaterial indicators of success (oral testimonies, changes on perception, technology engagements, etc.)
— The contribution to questions of local and global identity through native vegetation and native associations; and
— The transformation of our relationships of productivity with ethnological legacy, among many others.

Dr. Maria A. Villalobos Hernandez is an Assistant Professor at the Illinois Institute of Technology. She founded the organization Botanical City to call attention to the relevance of the Tropical Dry Forests in the face of climate adaptation, the preservation of endangered cultural landscapes in Latin America, and the development of performative research methods dealing with public spaces as means for conflict resolution in Latin American cities. In 2017, she won the first prize in the Venezuelan Architecture Biennial for the Rehabilitation of the Botanical Garden of Maracaibo, after more than 20 years of abandonment. It was the first time that a Landscape Architecture entry and a woman were granted this award.

[MA] What do you think the emergent areas of research within the field of landscape architecture are?

[MAVH] The next frontier of innovation seems to be a new understanding that what matters is not only what you do but also how you do it. Such methodological performative ambition comes not from a subversive goal against academic conventions but from the logical, objective, and desirable correspondence between the research method and the artistic-scientific landscapes in which the design occurs. The first dynamic that required reinvention was the simultaneity between building and learning. Also, we need more PhD programs to advance these questions! *WE* have an opportunity at IIT to expand on this field and lead the research in the city.

[MA] Where do you see the overlap between doctoral research in landscape architecture and architecture and what are similarities and differences in research methods for PhD students in these two disciplines?

[MAVH] Both professions share the responsibilities of questioning the urban design implications of technological innovations, new mobility systems, post-industrial sites, water quality, sea-level rise, climate change, social equity, rapid urbanization, and vital public spaces, among others. At the same time, both professions may benefit from expanding toward performative research methods. A performative method as described by Brad Haseman: "Certainly, performative research is derived from relativist ontology and celebrates multiple constructed realities. Its plurivocal potential operates through interpretative epistemologies where the knower and the known interact, shape and interpret the other."[1]

[MA] How might educators best guide and prepare graduate students toward impactful research outcomes?

[MAVH] Teaching is the construction of countless personal and collective landscapes. As an instructor, I aim to offer students the opportunity to experience the fact that learning is not separated from life itself. I see my role as the catalyst that can help spark the students' ideas, the consultant who can help students overcome a particular challenge, the connector who assists students in identifying ideal collaborators, and the teammate who participates in the processes of testing and sharing ideas. This is the fluid and open mechanism that I rely on to evolve continually and learn new ways to be a more effective academic partner and offer support to involve stakeholders, overcome organizational barriers, and develop strategies toward more effective communication and publishing. It is a method that offers possibilities, not dogmas. It learns as it grows. It changes itself and oneself in the process of becoming.

[MA] What are the opportunities of the collaboration between these two disciplines?

[MAVH] Landscape Architects and Architects are protagonists in the process of building the metropolis of tomorrow. Together, such disciplines investigate complex socio-environmental challenges through creative inquiry and innovative technological ideation. Looking ahead, throughout the design of the public realm and the built environment, they have the power of delivering a message of resilience and adaptation that emerges from a process where 'practice is research,' and such simultaneity is the celebration of the continually evolving environment.

Notes

1. Brad Haseman, "A manifesto for performative research," *Media International Australia Incorporating Culture and Policy: Practice-led Research, QUTePrints,* no. 118 (2006): 98–106. http://eprints.qut.edu.au/3999/1/3999_1.pdf (last access: 11/04/2014, p. 7)

PHD RESEARCH IN ARCHITECTURE INTERVIEWS

Kenneth Emig. "A View from Two Sides." Top view, 2016. Adàwe Crossing on the Rideau River, Ottawa, ON, Canada. Photo courtesy of City of Ottawa.

INTERVIEWS: WHY NOW?

Architecture theory is constructed in the shadow of buildings, history, and ideas over time—it can take place as forethought or as afterthought, just like design happens before construction and survey happens after construction, as a re-reading.

—Federica Goffi

Excerpts of interviews with current (Michelangelo Sabatino) and former (Harry Francis Mallgrave) PhD Directors, published in Federica Goffi's (ed.) *InterVIEWS: Insights and Introspection on Doctoral Research in Architecture* (Abingdon, Oxon and New York, NY: Routledge, 2020).

With the continued growth of PhD programs in architecture and the simultaneous broadening of research—*through history and theory, criticism, design research, practice-based research, creative practice, urban studies, materials science, cross-disciplinary research, industrial applications, and social sciences*—self-reflection is an urgent necessity to contextualize the diversity of approaches. We began a timely full-relief survey into a wide range of doctoral programs internationally to observe a kinetic image of architecture research in academic settings. This all-around exploration values the discipline in the plural for how it contributes to current debates at a societal level in the context of the expanding horizon of architectural inquiry from a variety of perspectives over the last 20+ years. Just like every survey, the interVIEWS denote that which is represented as much as the re-presenter; it is a reading, which becomes possible from the viewpoint/counterviewpoint of how interviewer and interviewee meet, determining a fusion of horizons that reflects history as much as it has a potential to direct future stories of research through the reading of the gaps between well outlined positions.

InterVIEWS is not a history book, nor a methodology book. Given that we are present on the scene, we chose to start in the middle by calling for program directors to engage in a critical questioning that contributes a vital document to the future history of architectural pedagogy.[1] The agenda was developed in a PhD Colloquium at the Azrieli School of Architecture and Urbanism (ASAU), Carleton University. The ASAU PhD in Architecture is an innovative and comprehensive program inviting students to engage critical forms of historical research and architectural practices through a written dissertation and other mediums manifested in an "epistemic object"—a *verum ipsum factum* demonstration in the making, which embodies thinking in architecture. The Carleton PhD in architecture rigorously prepares graduates for academic and professional fields, aiming at developing multidisciplinary approaches to individual scholarship. The interVIEWS started in October 2014 and lead to this publication and the funding in 2019 of the Carleton Research | Practice of Teaching | Collaborative –CR|PT|C– in Ottawa, Canada. The interVIEWS with PhD program directors function as a compass that needs calibration; the calibration is given by the currency of the questions of a new generation of emerging scholars and architect-scholars. The inter-argumentative relations on the practice of teaching and research contribute to the ongoing discussions on doctoral programs.

The artwork chosen for the front cover of the book is a 2016 piece by Ottawa-based artist Kenneth Emig titled "A View from Two Sides," on the Adàwe Crossing on the Rideau River, in Ottawa, Ontario, Canada (Figures 1, 2, and 3). Adàwe is an Algonquin word which means trade. Emig defines the piece as a kinetic observatory, and in his own words:

"The original call for submissions required an artwork that would connect both neighbourhoods, both sides of the Rideau River. The spheres reflect into one another. There are many contrasting scenes and views available, for example, comparing the surrounding environment to the concentrated image of the environment in the spheres or the sky and the water. There are also no sides on a sphere. What are the two sides?"[2]

Indeed there are no sides to a sphere and what conversely emerges is a kinetic contiguity of place and continuity of

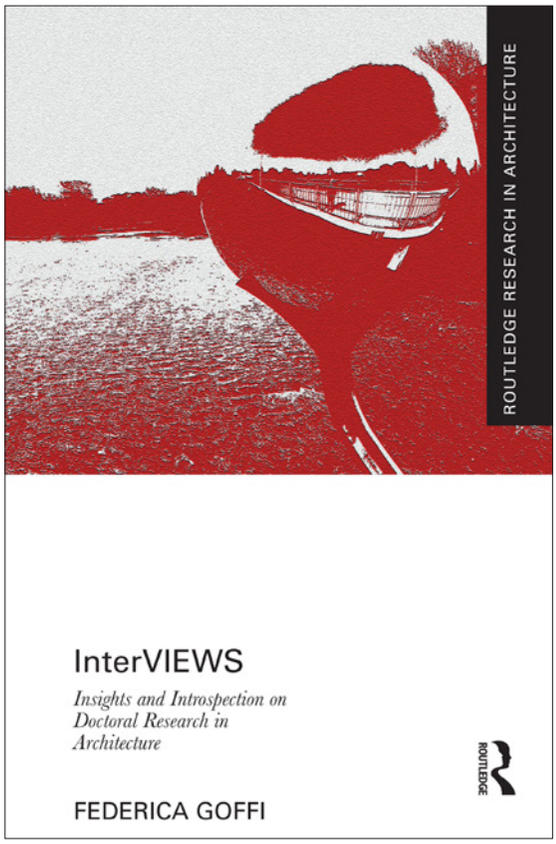


Figure 1: Cover of the book *InterVIEWS: Insights and Introspection on Doctoral Research in Architecture* edited by Federica Goffi. © Courtesy of Routledge 2019. On the cover an artistic photograph by Goffi of "A View from Two Sides," by Ottawa artist Kenneth Emig, 2016. Adàwe Crossing on the Rideau River, Ottawa, Ontario, Canada.

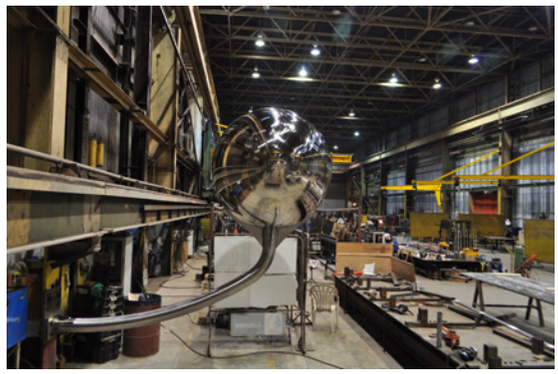


Figure 2: Kenneth Emig. "A View from Two Sides." Factory view, 2016. Montreal, QC, Canada. © Kenneth Emig.

Figure 3: Kenneth Emig. "A View from Two Sides." Detail view, 2016. Adàwe Crossing on the Rideau River, Ottawa, ON, Canada. © Kenneth Emig. Photo courtesy of City of Ottawa.

time suggesting that we cannot fragment or segment the land or its people from the stories in place; there is however a multidirectionality, as a result of a multicultural society and diversity of backgrounds.

As for the book, the foundational agenda was set in a dialogical, discursive and conversational approach narrating the recent stories, which may one day amount to a history of PhD programs in architecture in the world. These positions form not so much a contraposition of opposites, as a continuum of change of research and education. 'Questioning' and 'theorizing' emerged as ongoing transformative processes, offering a tangible record of current research attitudes and discourses, probing into contemporary lines of investigation, and drawing-out the characteristics of each program as a broad spectrum of attitudes in addressing history, theory, and design.

The majority of interVIEWS, presented in chronological order, are not exhaustive of the approaches currently pursued in academic institutions worldwide and were primarily with doctoral programs with a well-established history in the Anglo-Saxon educational system. Some programs were the first of their kind in architecture schools: MIT, Princeton University, McGill University, the Bartlett, and RMIT, which then became paradigmatic of approaches followed elsewhere. Others are recently established programs, like the Creative Practice PhD at the University of Auckland, and the PhD in History and Theory at Penn State University. Selecting from within the above criteria, we looked for a broad diversity of research definitions.

The survey of doctoral research in architecture begun with InterVIEWS (Routledge 2019) will continue through podcast interviews that will be made available on the CR|PT|C website,[3] with the intent to expand the project geographically and in terms of research orientations over time.

While several publications have addressed a main research approach:[4] history and theory,[5] criticism, research by design,[6] practice, or creative practice,[7] it is seldom the case that the diversity of approaches is given prominence.[8] Conversely, *InterVIEWS* acknowledges the diversity in approaches to research in architecture to evidence meaningful differences and a range of contributions in academic institutions by contrasting diverse positions, valuing a range of attitudes, and documenting their simultaneous developments. The usefulness of a full-relief self-reflection

Notes

1. Gadamer, Hans-Georg. "The Hermeneutic Priority of the Question." In *Truth and Method.* London & New York: Continuum, 2006 [1960]: 356–371.

2. Kenneth Emig responded to an email on November 15, 2019 by Federica Goffi asking about the naming of the piece.

3. See www.criptic.org, accessed December 19, 2019. Rana Abughannam, Émélie Desrocher-Turgeon, and Pallavi Swaranjali coordinate CR|PT|C along with the editor of *InterVIEWS,* Federica Goffi.

4. Wang and Groat (2013) covers research methods in architecture: historical research, qualitative research, experimental and quasi-experimental research, simulation research, logical argumentation, case studies. Borden and Rüedi Ray (2014).

5. Hartoonian 2018. Porphyrios 1981, addresses assumptions inherent in Hegelian and hermeneutical approaches to history.

6. Joost, et al. (2016) and Fraser (2013) discuss design research and its differences from design practice. See also Hensel 2012.

7. Jenner 2013: 203–220. Elkins 2009.

8. Lucas (2016) explores research methods in material culture, architectural history, politics of space, philosophy, phenomenology, ethnographic research, drawing.

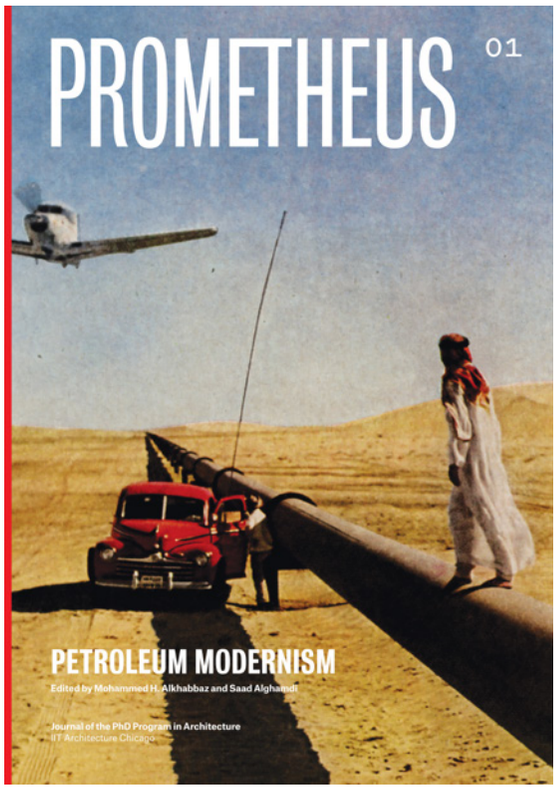
becomes apparent in the vibrant and, at times, divergent viewpoints that offer a thought-provoking opportunity to consider the openness and breadth of the field. Diversity should be recognized, valued, and maintained, preventing homogenization, which is, at times, seen in research models typical of scientific approaches. Considering the concerns raised for the number of PhDs across scientific disciplines, this variety of approaches promises that doctoral research in architecture as a whole prepares for a wide range of professional directions not limited to teaching, and including practice, industry, government agencies, and other institutions.[9]

This book contends that the diversity of research attitudes in architecture is better exposed not by manuals that exemplify research methods, but by leading figures guiding doctoral programs, offering a fuller spectrum of tactics through storytelling. The continued growth and implementation of new approaches add to the recent history of doctoral research in architecture and show how diverse research approaches can augment each other sustaining the needs of the discipline in the plural.

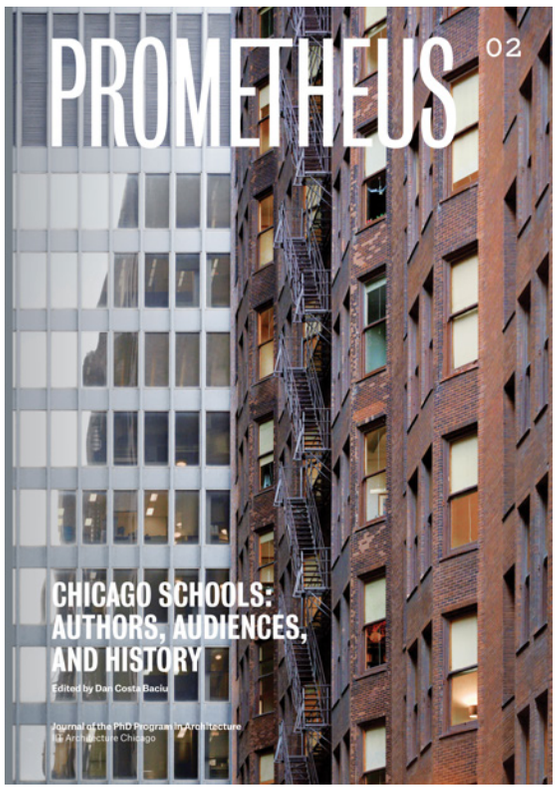
This in-depth probing supports readers to situate their undertakings in the context of academic research, opening up new readings in between well-outlined positions to consider one's stand in architectural research. As a collection, the interviews opened-up a dialogue that allowed invited scholars to discuss the educational approaches, exposing the distinctive nature of research paths at each institution, while positioning each program in the broader context of doctoral research at the national and international level. While through well-constructed essays, scholarship operates a transmission of knowledge, through the medium of the interviews, the voices of architectural scholarship emerge in the act of sharing urgent ideas through uncompromised questioning, and thus—rethinking became the subject of the book.

Fraser (2013) probes design research in Europe, U.S., and Australia, establishing its role, scope, and contributions.

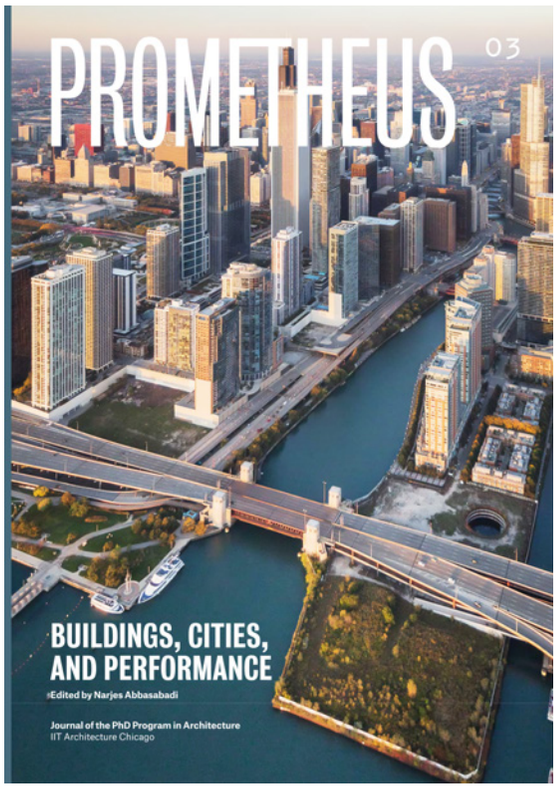
9. See the articles accessed July 21, 2019: //www.nytimes.com/2016/05/06/science/phd-post-doc-positions-study.html; //www.nytimes.com/2016/07/14/upshot/so-many-research-scientists-so-few-openings-as-professors.html; //www.theglobeandmail.com/news/national/education/who-will-hire-all-the-phds-not-canadas-universities/article10976412/. Despite the concerns expressed in *The New York Times* and *Globe and Mail* about the high number of doctoral degrees, there are only few schools with limited enrollment that currently award this degree in architecture in Canada.



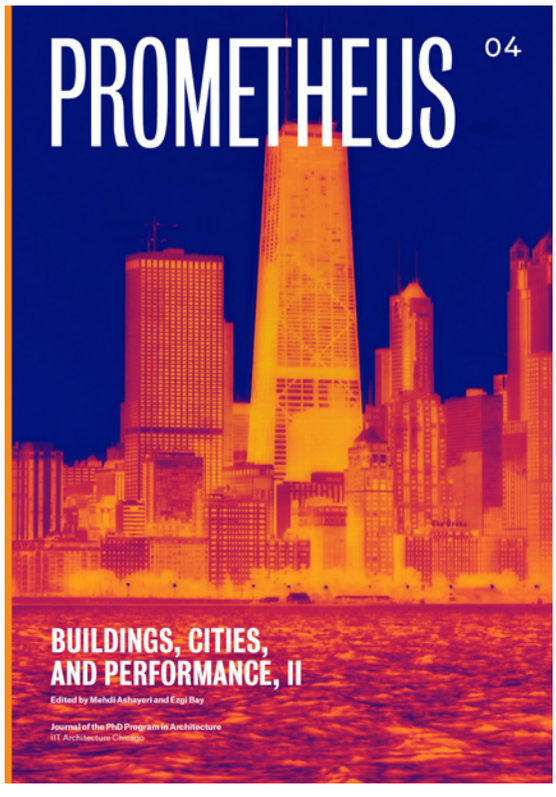
Cover of *Prometheus 01, Journal of the PhD Program in Architecture: Petroleum Modernism*. Edited by Mohammed H. Alkhabbaz and Saad Alghamdi.



Cover of *Prometheus 02, Journal of the PhD Program in Architecture: Chicago Schools: Authors, Audiences, and History*. Edited by Dan Costa Baciu.



Cover of *Prometheus 03, Journal of the PhD Program in Architecture: Buildings, Cities, and Performance*. Edited by Narjes Abbasabadi.



Cover of *Prometheus 04, Journal of the PhD Program in Architecture: Buildings, Cities, and Performance, II*. Edited by Mehdi Ashayeri and Ezgi Bay.

INTERVIEW 4: THE EXPERIENCE OF ARCHITECTURE

I would like to see the architectural experience seriously studied. The goal would not be to come up with rules or principles of design but to provide new information about who we are, how we experience and simulate our environments with our bodily or organic systems. These insights can be valuable to the designer. It is not about reducing or determining what design should be, but instead about understanding who we are and thereby becoming better architects. One component of a PhD program should be canvassing the breakthroughs across the humanities and biological sciences and bringing this sophisticated and complex knowledge to the architect's attention.

—Harry Frances Mallgrave

Harry Francis Mallgrave
PhD, Distinguished Professor of Architectural History and Theory Former Director, PhD Program in Architecture
Illinois Institute of Technology, U.S.

[Martine Gallant] Can you describe the role you had in the PhD program at the IIT? Did you follow specific research methods with your students?

[Harry Francis Mallgrave] I retired from the IIT at the end of 2014. The PhD program was founded in the early 1990s as an arm of SOM and other large firms in Chicago. It was technologically oriented and focused on the design of tall buildings. The advent of engineering software marginalized research in this area because it became possible to do sophisticated computer simulations. Dean Wiel Arets sought reorientation of the program and asked me to undertake this process for two years because I had planned retirement. This new direction of the program has been continuing under Michelangelo Sabatino.[1] In general, PhD programs have changed significantly in recent years. Twenty, or thirty years ago, one could go into a PhD program and find uncultivated areas of research. Over the years, these pockets of historical knowledge have been filling up. When I entered the doctoral program at Penn with Marco Frascari, we were the only two students. At that point, in 1978, I was looking at Gottfried Semper, and there had been virtually no research on him since the early 1930s.[2] Of course, in 1979 the Swiss Federal Institute in Zurich and the Dresden Art Museum held symposia and exhibitions on Semper, but only Joseph Rykwert and Wolfgang Herrmann had started to look at his writings. Later, in the 1990s, I was invited to work in Zürich for a year on his monograph.[3] Access to archival information was the optimal setting to gather new material. Untapped archives are rare today, and doctoral research is changing accordingly.

[Federica Goffi] How would you define the direction that you were trying to take the program in?

[HFM] Over the years, my interests changed. I was trained as a historian with people like Stanford Anderson and Wolfgang Herrmann. Joseph Rykwert sat on my defense committee at the PhD program in history at Penn. I have always been cautious of PhD programs focused solely on theory. Both Peter Eisenman and Christopher Alexander focused on theory alone in the 1960s.[4] That was at the inflection point when theory became prominent in the 1970s, '80s, and '90s. I am working on a book that is tentatively titled: *There Is No Architectural Theory.*[5] The premise is that architectural writings—whether it be by Alberti or anyone else—offer cultural arguments. They affirm beliefs about how to approach design, but they are not theories. After we have gone through this period of post-structural

theory, what came out of it? There was no theory of design there; rather, a conceptualization wrapped around design. If we think about architecture as cultural theory, we also have to take into account that cultural theory has changed dramatically since the 1960s. The nature-nurture debate, predominant in the 1960s, was overtaken by the sociobiological debate in the 1970s, the genetic and new evolutionary models of the 1980s and '90s, and then suddenly this great burst of biological research of the last twenty years, which has opened new areas of interest in the humanities. My direction provokes suspicion from those groomed in the postmodern tradition, but we have a better understanding of how we engage the world now than we did twenty years ago.

[Ryan Stec] Can you tell us what your idea of theory is?

[HFM] It is ironic that I have spent my life writing about theory, and now I make the statement that there is no theory. Bill Hillier once criticized conventional architectural theory by noting that its premises could not be tested.[6] Theory generally consists of beliefs or conventions taught in schools. In areas of science, a theory is something that can be tested; the same is true in the social sciences. We now have the tools to look at how people experience architecture, whether it is a city or a room. For instance, there is a body of thought called biophilic design, which is based on the premise that natural or green landscapes are better fitted to our sensory systems, than the hard materials that make our cities, like concrete, steel, and glass. This is an interesting hypothesis of the evolutionary psychology of the 1990s, but only now hard evidence is gathered to document it. We can put monitors on people walking through different urban sites and get physiological and neurological responses. We begin to understand the city's effect on the nervous system, and there is the potential to reconsider how we plan cities. Yet, new cities over the last twenty years have been based on typologies like the glass towers. We now know that if we go into a forest for three days, our blood pressure falls, stress declines, and we clear our minds. When we come back our cognitive skills test at a higher level. The cells of the immune system that fight cancers and diabetes have a marked increase. Such research suggests that green areas are desirable within cities. This can radically transform urban and architectural design. There has been work done in social cognition, and new models of the social brain are being developed.[7] For years we looked at the human brain as something that evolved throughout millions of years through the technological evidence of tools, such as hand axes. It now seems that the complexity of our social systems played a more significant role, and social complexity is worked into our genetic structures. Yet, sociality has not been considered in architectural thinking over the last half a century. Earlier behaviorists' approaches of the 1960s tried to 'change' human behavior. Today, we look at social nature differently, and we can design more humane environments.

[RS] There are PhD approaches that go beyond history and theory. Frascari helped design our doctoral program, and our dissertation includes an epistemic object that explores the research topic. There are programs like the RMIT at Melbourne University that are based on a reflection on practice. What impact will this have on the type of knowledge produced by contemporary architectural scholars, and what does this say about current shifts in pedagogy?

[HFM] Different approaches could be taken, but what I would not like to see is an intellectual softness in any project. We all prosper by having programs that are different and have faculty with expertise in certain areas, and if one has a topic to pursue, one needs to go where it is best to pursue it.

[FG] One may think of architecture as an open territory, where fields like philosophy, neuroscience, or cognitive science bridge over, but are there boundaries in architectural research that we should be aware of?

[HFM] We should be extracting knowledge that is relevant to our task from other fields. Years ago, I worked on a book on late nineteenth century German aesthetic theory and came upon extended discussions of issues like our feeling-for-form (*Formgefühl*) and feeling-into-form (*Einfühlung*)—discussions that collapsed in the face of the functionalist tenor of early modern theory. Today these ideas have been resurrected by neuroscientists, who have technologies such as MRI that can record these processes in the brain. This knowledge is of use to the designer because the boundary for architecture is 'design' itself. What I would not like to see is something like the Derridean fascination of a few decades ago, which led some architects to think that they were going to put into practice a mysterious "trace." What I also would not like is the harvesting of methodologies from other fields. The role of doctoral research is to provide useful information. Architects are busy people, and doctoral programs should provide research that can be disseminated, without setting directions for practice.

[FG] Are there research methods that might impede rather than advance our understanding of architecture?

[HFM] Conceptualization has that tendency. About 90% of the experience of architecture is pre-reflective. When we experience a building by Antoni Gaudí, we do not necessarily conceptualize what we are experiencing. Architecture is experienced as an organic—whole body—event; it is filled with moods and atmospheres. Whenever we put up a conceptual structure, we run into problems, because people do not perceive architecture in that way.

Notes

1. See InterVIEW 10 with Michelangelo Sabatino. Recently, Rahman Azari was appointed acting PhD director, at the IIT.

2. Mallgrave 1983; Mallgrave 1996.

3. Semper 1989.

4. Eisenman 2006; Alexander 1964.

5. Mallgrave 2018.

6. Hillier 2015.

7. Dunbar, Gamble and Gowlett 2010.

INTERVIEW 10: ARCHITECTURE, HISTORY, AND TECHNOLOGY IIT COLLEGE OF ARCHITECTURE'S PHD PROGRAM IN ARCHITECTURE[1]

Michelangelo Sabatino
PhD, Director of the PhD Program and Professor, College of Architecture
John Vinci Distinguished Research Fellow
Illinois Institute of Technology, U.S.

Strategically exploiting Chicago as a laboratory for research (applied and scholarly) is part of the past and present identity of our PhD program in Architecture. In Chicago, we are fortunate to have a large number of world-class universities, museums, foundations, and firms that offer our PhD students access to research resources (archives, 'know-how') and interdisciplinary collaboration. While Chicago is key to our identity as an urban-based PhD program, students and faculty explore a broad range of research approaches and topics. During my tenure as director, I taught a doctoral methods seminar for incoming doctoral students. Together, with a number of invited guests, we analyzed Chicago's built and natural environments from different disciplinary perspectives, ranging from engineering and geography to history and sociology.

—Michelangelo Sabatino

[Federica Goffi] Can you describe the changes that you brought to the PhD program at the IIT College of Architecture during your tenure as the director? Are there key elements of continuity and discontinuity in the history of the program since when it started in the late 1990s?

[Michelangelo Sabatino] I inherited the directorship from Harry Francis Mallgrave. During the short time he served as director, Mallgrave implemented a number of important changes, such as formalizing our two tracks of specialized research: Technologies of the Built Environment (TBE) and History, Theory, and Criticism (HTC). Mallgrave's predecessor was Mahjoub Elnimeiri who is a structural engineer on our faculty; he founded the program and ran it for many years primarily as a laboratory of applied research.

Shortly after my appointment as director in 2014 (ended in 2017), I established a new framework for the program with the triad Architecture, History, and Technology.[2] If we visualize this triad as an arch, history serves as a keystone (a trait d'union) between two springer stones: architecture and technology. I believe architects interested in applied research need a broad historical perspective to ground their understanding of the contemporary practice. Historians also need to be informed about the present to understand the tensions between new and old fully. MIT, a science and technology-rich university like IIT, offers a similar approach with its program in Art, Culture, and Technology.

To foster community and offer our PhD students and affiliated faculty access to top researchers from academia and practice, I established our Architecture Research Forum which hosts weekly lectures by guests from around the world that come to share their work. The opportunity to meet these researchers creates future networking possibilities for our students. I also established an annual peer-reviewed symposium and publication, *Prometheus, Journal of the PhD Program in Architecture,* to serve as a platform for our students and their research.[3] Student-run symposia and journals offer students the opportunity to work collaboratively with their peers. Networking and publication initiatives such as these have been made possible by the John Vinci Distinguished Research Fellowship (JVDR) which is part of a donation to the PhD program made recently by the Fred Eychaner Fund. The Fellowship is named for the renowned architect, activist, and preservationist John Vinci (ARCH 1960). Vinci's approach to preservation required careful historical research. Honoring him reinforces the

identity of our PhD program, especially as it relates to HTC. I currently serve as the inaugural JVDR fellow.

Our PhD Program emerged from a tradition of research begun by faculty affiliated with our Master of Science in Architecture Program established in the early 1940s. For many years, faculty such as Myron Goldsmith (ARCH 1939, MS 1953) and Fazlur Khan worked with students on design research aimed at advancing 'structural architecture.' The overlap during this time between engineering and architectural research was strong, especially as it related to the design of tall buildings, spearheaded by Goldsmith and Khan, both employed at SOM (Skidmore, Owings & Merrill LLP). More recently, Antony Wood (executive director of the Council of Tall Buildings and Urban Habitat) was appointed as a research professor, and teaches advanced studios, while supervising a number of dissertations that relate to his areas of expertise.

Deciding which students to admit into our program, which faculty to ask to provide mentorship, how to allocate resources to support students, what areas of research to focus upon, and what specialized courses to offer are just some of the many decisions I made as a director.

[FG] What is the impact of the research produced by your graduates?

[MS] A number of our graduates currently hold faculty positions in universities and are members of design-research oriented firms around the world. To help facilitate their entry into the workplace, we have encouraged advanced PhD students to take up internships before graduation in a variety of research institutions ranging from the CCA to the University of Chicago as well as in firms such as SOM.

The majority of our PhD students join our program having completed professional degrees in architecture; they join us from the Americas, Asia, Europe, and the Middle East. They typically speak a number of languages and are excited to engage with all that Chicago has to offer.[4] We seek to train students that wish to bring innovation to contemporary architecture and construction practices as well as pursue academic careers. We encourage them to think creatively in terms of post-graduation employment: they can use academia as a platform to jumpstart impactful initiatives or join think tanks or NGOs working toward shaping how cities are governed and built.

Applied research is an especially promising area for those who aspire to have an impact on practice. The majority of architects design new buildings by deploying products already available on the market. Architects are seldom using building products that they designed, prototyped, and guided through production. It would be transformational if architects, for example, could use their design talents for the production of high-performance curtain walls that could be used in the ever-expanding market of tall and supertall buildings.

I am optimistic about the interdisciplinary opportunities available to students who choose to collaborate with their engineering counterparts in the Department of Civil, Architectural, and Environment Engineering (CAEE) in IIT's Armour College of Engineering. Brent Stephens, currently the Chair of the CAEE, has played an active role over the years on our dissertation committees.

It is worth recalling the distinction between architects and engineers articulated by Peter Rice in "The Role of the Engineer": "I would distinguish the difference between the engineer and the architect by saying the architect's response is primarily creative, whereas the engineer's is essentially inventive."[5] During my tenure as director, I fostered an environment of inquiry that reinforced the creative and inventive. A combination of these skill sets (coupled with an understanding of differences between qualitative and quantitative methodologies) is essential to enable innovative research in an architecture school. Assembling an interdisciplinary PhD committee with experts that do not share the exact methodological approach is useful because it encourages everyone to think in new ways.

[Émélie Desrochers-Turgeon] Is your TBE track set up in response to contemporary architectural research, or was the HTC track introduced in response to the TBE?

[MS] Our two specialized tracks (TBE and HTC) rely on different, yet complementary, approaches to applied research and scholarship with history serving as the keystone. We have faculty that teach in the PhD program whose scholarship addresses the relationship of architecture with science and technology.[6] During my first year as director, I helped launch a seminar in history and philosophy of science and building technology, which is offered to PhD students in both tracks. One of our PhD program faculty, Professor Emeritus Peter Land, consistently brought his interests in new building technologies together with a deep understanding of approaches to passive heating and cooling gleaned from traditional pre-industrial environments. Our committees typically include faculty whose expertise includes architecture, engineering, landscape architecture, and urbanism.

The dialogue between history-theory and science-technology plays out in the work of our students. For example, our PhD candidate (and administrative assistant for the program) Marcos Amado Petroli from Brazil is currently completing an HTC-track dissertation entitled "Arches and Vaults in the Service of Modern Civic Monumentality." He is analyzing the use of the arch in America by architects such as Eero Saarinen, Matthew Nowicki, Wallace Harrison, Richard Neutra, Harry Weese, and Louis Khan. Petroli's committee is composed of historians like Carlos Comas (Universidade Federal do Rio Grande do Sul in Porto Alegre, Brazil) and I, as well as CoA faculty member Assistant Professor Paul Endres, who is a licensed architect, civil and structural engineer.

Notes

1. This interview was conducted just months before Sabatino was appointed Dean of the IIT College of Architecture. The interviewee edited the transcription for clarity before its publication. Shortly after Sabatino's appointment to Dean, Rahman Azari was appointed Director of the PhD program. Azari's primary research interests lie in the broader field of carbon-neutral built environments. Within this field, he conducts research at four scales of materials, skins, buildings, and cities to estimate the energy performance and environmental impacts of buildings and to explore how design and technology can reverse the negative consequences. He is interested in the development of building skins made out of innovative materials that can absorb CO_2 in the air and use it to generate renewable energy. He also combines building performance analysis and data science techniques to understand the patterns of energy use and environmental impacts of buildings and cities.

2. Initially, the triad was Architecture, Culture, and Technology. In conversation with Rahman Azari, we agreed that replacing culture with history would make for a more explicit reference to our HTC track and to the expertise of our history-theory-criticism faculty.

3. *Prometheus* is a peer-reviewed, PhD student-run publication that explores the relationships between architecture (and allied disciplines), history, and technology. Prometheus is the symbol for our journal

[Miquel Reina Ortiz] Can the doctorate entail a design project?

[MS] A dissertation in TBE does not necessarily lead to a design project. However, a handful of students routinely conduct applied research about high-performance with essential implications on the sustainable design of buildings.

[FG] Is it possible to have an applied materials science research agenda tailored to the students' research, where the written component would remain a place where to discuss theory?

[MS] Should a student decide to do so, they could easily combine an applied materials science research focus with a more speculative theoretical discussion. I believe that doctoral students must choose gradually on their own how to shape their research and experiment with writing trajectories. Yet, admission into the program and selection of research topics is typically required to fall, more or less, within the area of expertise of faculty mentors who are available to serve on committees.

Since I have researched the revision and expansion of modern architectures during the post-World War II years, I spearheaded a collective HTC research project entitled Petroleum Modernism: Architecture and Identity in the Gulf with a group of our PhD students with backgrounds from the Middle East. They researched how the discovery of petroleum from the late 1930s onward brought considerable innovation and disruption to the traditional built and natural environments in countries surrounding the Gulf. Although I did not have in-depth prior knowledge about the Middle East, I was interested in how tradition and modernity were negotiated during the post-World War II years by non-Middle Eastern architects like Minoru Yamasaki (1912-1986) who received important commissions in Saudi Arabia. The group of students, which I assembled, organized the first graduate-run symposium on the same topic. The results of this symposium are soon to be published in Prometheus.

[ÉDT] Are there strategies that students apply to produce well-crafted dissertations?[7]

[MS] Patience and humility are essential qualities for researchers. I believe that it is also important to avoid allowing theory to get in the way of writing history. Over-theorization tends to distort what primary sources have to say in their own right. For applied research, one needs to set up carefully the parameters for the collection of data to avoid the pitfalls of conscious, or sub-conscious biases.

[FG] How is the relationship between history and theory in the program negotiated?

[MS] The degree to which students embrace theory and history is entirely dependent on the track they select as well as their affinities. I believe that to be an effective historian one needs to understand the architectural theory, but more importantly, one needs to be aware of the intellectual production of a number of related disciplines. My predecessor, Mallgrave is a distinguished scholar of architectural history and theory. During his time at IIT, he published several books about architectural theory.[8]

[Pablo Medina Villanueva] Are there PhD programs similar to yours that you find interesting?

[MS] The PhD Program in History, Theory, and Criticism of Architecture and Art at MIT shares some similarities with ours insofar as it is located in a department of architecture that is part of a science and technology-rich university. PhD programs in architecture such as the ones at UCL Bartlett (UK), TU Delft (Netherlands) and the ETH Zürich (Switzerland) are dynamic doctoral-research environments. They have distinguished researchers on faculty who attract equally talented students.

[MRO] Does S. R. Crown Hall affect how students are educated about architecture, landscape architecture, and urbanism?

[MS] Although a number of PhD students have requested a workspace in S. R. Crown Hall, they are assigned a personal desk in the dedicated PhD study wing in "3410," a building located next to S. R. Crown Hall. I believe S. R. Crown Hall, designed by Ludwig Mies van der Rohe and opened in 1956, shapes how undergraduate and graduate students learn about the natural and built environment, both individually and collectively. It is a twentieth century iteration of the traditional one-room schoolhouse found in the Midwest, where different levels of students congregated and learned under a shared roof. A big part of the student presence in S. R. Crown Hall is tied to their desks. In 1956, Jacques C. Brownson (BArch 1948; MS 1954) designed drafting tables to coincide with the opening of S. R. Crown Hall. The drafting tables consisted of a birch plywood tabletop mounted on a 5 feet × 2 feet and 6 inches welded base of 1 foot × 1 foot square-section tubular elements. According to one account, Mies insisted that the drafting tables be flat, not slanted, to avoid privileging one direction over another. From the vantage point of their desks, and thanks to the glass "walls" and the trees (Gleditsia triacanthos-Honey Locust and Craetagus-Hawthorn) planted under Alfred Caldwell's direction, students are always aware of the changing seasons.

because his act of irreverence in stealing fire from the gods paved the way for the advancement of science and technology for all of humanity.

4. Typically, our PhD cohort consists of approximately 50 percent male and 50 percent female students.

5. Rice 1994: 72–73.

6. Sean Keller is a historian and critic of modern and contemporary architecture with a focus on the relationship between architecture and technology after 1945. See Keller 2017. He is completing a book on the architecture, art, and landscape of the 1972 Olympics in Munich (forthcoming from Yale University Press). Alla Vronskaya's field of expertise is the history and theory of modern architecture. Her research focuses on the relationship between architecture, science, and techniques of social engineering in Russia and beyond during the interwar period.

7. This question was written in response to the course "Crafting a Dissertation" (ARCH 602), at the IIT Doctor of Philosophy in Architecture, Chicago. arch.iit.edu/files/pdf/15967/coa-2016-17-programinfosheet-phd.pdf, accessed November 21, 2017.

8. Mallgrave 2005. Mallgrave and Goodman 2011.

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INTERVIEW: RESEARCH IN ARCHITECTURE

[MA] [EB] What are the greatest challenges and opportunities for architectural research today in and outside of academia?

[HRA] Let me start with the opportunities, I think the future of architectural research is very promising. There is a clear increase in interest in architectural research, with its diverse areas of interest and wide range of methodological approaches. You can see that in many schools of architecture that now have increased faculty research expectations and increased portfolios of research programs at the master's and PhD levels. You can also see that in the profession, with more and more architectural firms showing interest in architectural research and an increasing number of them developing independent research departments and in some cases developing their own dissemination tools. There is also a growing realization that architectural research, as an independent mode of enquiry, has an important role to play in both the discipline and the profession. Furthermore, the increasing interest in interdisciplinary research as a necessary approach to address our complex societal challenges offers considerable opportunities for architectural researchers. Our skill sets, which allow us to draw from and synthesize different strands of knowledge, make us uniquely qualified to play key roles within interdisciplinary teams. This will ensure that architectural issues remain at the forefront of research efforts in our institutions.

From the point of view of challenges, I think the biggest challenge architectural researchers face, both in schools of architecture and in the profession, is the continuing need to demonstrate the value that architectural research can offer to better understand the problems our societies are facing and to build a knowledge base that can strengthen and enrich design activities. In other words, we need to continue making the case that architectural research is a valid and independent form of enquiry that does not compete with or reduce the value of design as the primary activity in our discipline. In fact, effective architectural research increases the potential that design offers to develop informed and sustainable solutions for our problems. From an external point of view, we also face a challenge in demonstrating the value offered by architectural research to the various external audiences we have. These include, but are not limited to, other disciplines, university administrators, and funding agencies. To do so, we need to continuously ensure the quality and rigor of our architectural research activities, as well as more effectively and objectively demonstrate the positive impact it has on our communities.

[MA] [EB] How might educators best guide their students toward impactful research outcomes?

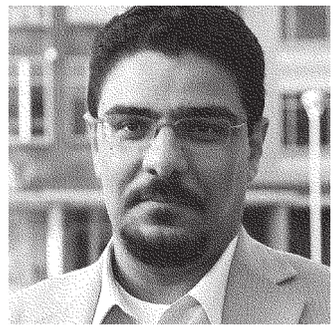
[HRA] This is a very critical question. I think the first step in any architectural research activity is to have a strong and deep understanding of the state of knowledge in the researcher's area(s) of interest. Such an understanding is critical in allowing the researcher to identify the gaps in the knowledge base that s/he can address. It is also critical for architectural researchers to have a strong understanding of the range of research methods available to architectural researchers and how to select the most appropriate methods for their specific questions. This ensures the quality and rigor that is needed to achieve impactful research outcomes. Additionally, in line with the comments above regarding the importance of interdisciplinary research and of demonstrating the value of architectural research to external audiences, it would be very beneficial if architectural researchers became familiar with the increasing lists of interdisciplinary societal challenges being developed by different institutions and funding agencies. The majority of these challenges offer considerable potential for architectural research. Identifying topics that contribute to better understanding or finding solutions for those challenges can further demonstrate the value that architectural research can offer to external audiences and can facilitate opportunities for increasing the roles played by architectural researchers in interdisciplinary teams.

[MA] [EB] What, if any, are the differences between advanced architectural research in North American universities and their counterparts in Europe and beyond?

[HRA] Drawing back on my experience as a graduate student in the UK many years ago, as a direct experience with architectural research in European institutions, as well as my interactions with colleagues form European institutions, I think the main differences relate to the structure of graduate programs as well as to the expectations from students. In the U.S., graduate programs at both the master's and doctoral levels tend to be relatively structured with a large amount of required and elective course work. Their European counterparts on the other hand tend to be more open and student-centered with individual students working with their advisors to design their own programs in their area of interest within the larger framework of institutional and disciplinary expectations. The funding situation, especially regarding doctoral programs, also varies somewhat between the two locations. European universities tend to have mostly project-based funding, either provided

HAZEM RASHED-ALI

Interview conducted by Mehdi Ashayeri and Ezgi Bay, January 2020.



by the supervising faculty or offered directly to the student from an outside funding agency; U.S. universities combine these forms of funding with institutional and program level funding offered to the student for at least part of the program's duration.

[MA] [EB] What are similarities and differences in research methods for undergrads, master's, and PhD students?

[HRA] The major differences between these three levels, in my view, relate less to methodological differences and more to the prior level of experience of the student as well as the goals and expected outcome from their research work. At the level of undergraduate students, the focus is mostly on introducing those students to what research is and helping them develop a basic understanding of the current areas of research interest in the discipline and the range of research methods available to architectural researchers. At this level, however, there is likely no expectation of mastery of topics or of achieving high level research outcomes. At the master's level, I expect my students to develop a strong understanding of different methodological approaches and how to select the best research method(s) to address specific research questions. Then, they are expected to focus on a narrow topic and to develop and demonstrate a strong understanding of this topic and to use appropriate research methods to answer some clearly defined research questions. The scope of these questions is, however, relatively small, and the focus is more on demonstrating the student's mastery of the topic and ability to design a research activity and less on generating new knowledge. Conversely, at the PhD level, the primary expectation is to develop a new contribution to the existing knowledge base. This typically translates into more depth and larger scopes for PhD-level research projects. PhD students/candidates should also demonstrate a stronger ability to work independently.

[MA] [EB] What are similarities and differences between applied research and historical-theoretical approaches?

[HRA] I strongly believe that one of the unique aspects of architectural research is the diversity of areas of interests and methodological approaches it offers. This diversity cannot be found in most other disciplines and offers considerable potential for architectural researchers who are interested in achieving a deeper, multi-faceted understanding of the research problems that interest them. While theoretical and applied approaches to architectural research, and to research in general, draw from different disciplinary traditions, I consider both to be critically important components of what architectural research is. In fact, I consider both to be highly complementary. Through theoretical research, we can achieve a better and deeper understanding of critical issues for our discipline, profession, and communities. This theoretical research then becomes a strong foundation for the applied research needed to develop practical solutions that can directly impact and benefit our communities.

Dr. Hazem Rashed-Ali is an Associate Professor at University of Texas San Antonio and President of the Architectural Research Centers Consortium (ARCC).

PHD DIRECTOR BIOGRAPHY

Dr. Michelangelo Sabatino trained as an architect, preservationist, and historian. Professor Sabatino currently serves as Director of the PhD Program at IIT Architecture Chicago. From 2017–2019, he served as the Rowe Family College of Architecture Endowed Chair Dean and is currently the inaugural John Vinci Distinguished Research Fellow.

Sabatino earned a Laurea in Architecture at the Università IUAV di Venezia and a doctorate in the Department of Fine Art, University of Toronto, and held a postdoctoral fellowship in the Department of History of Art + Architecture, Harvard University. Sabatino taught history and theory of architecture at Yale University and the University of Houston before his appointment to IIT in 2014.

Sabatino publishes regularly in scholarly journals and anthologies. His monograph *Pride in Modesty: Modernist Architecture and the Vernacular Tradition in Italy* (2011) won critical acclaim and multiple awards, including the Modern Language Association's *Aldo and Jeanne Scaglione Prize for Italian Studies,* the Society of Architectural Historians' *Alice Davis Hitchcock Award,* and the American Association of Italian Studies' *Best Book Award,* 20th and 21st Centuries. He recently co-authored *Canada—Modern Architectures in History* (2016) with Rhodri Windsor Liscombe; and co-edited *Avant-Garde in the Cornfields: Architecture, Landscape, and Preservation in New Harmony* (with Ben Nicholson, 2019), *Making Houston Modern: The Life and Architecture of Howard Barnstone* (with Barrie Scardino Bradley and Stephen Fox, 2020), *Carlo Mollino: Architect and Storyteller* (with Napoleone Ferrari, 2020), and *Modern in the Middle: Chicago Houses 1929–1975* (with Susan Benjamin, 2020). www.michelangelo-sabatino.com

EDITOR AND CURATOR BIOGRAPHIES

Mehdi Ashayeri is an architect, researcher, and educator. He is currently a PhD Candidate in Architecture at the Illinois Institute of Technology (IIT). He earned his master's degree in architecture and his bachelor's degree in engineering at Tehran Azad University. Ashayeri's research centers on sustainability, health, and computation in the built environment. His doctoral dissertation "A hybrid data-driven simulation framework for integrated energy-air quality (iE-AQ) modeling at multiple urban scales" focuses on developing a human-centered platform to support data-informed decisions for reducing human health risks and energy consumption. He has published in several premier journals. He has presented his research at several academic conferences, including the ASHRAE Building Performance Analysis Conference and the Art Rosenfeld Symposium on Energy-Efficient and Grid-Interactive Buildings. In 2019, Ashayeri served as a researcher in the Sustainable Urban Systems workshop for developing research agendas for Chicago's Climate Action Plan. He recently co-organized the 4th annual Symposium of the IIT College of Architecture-ARCC with the theme of 'Buildings, Cities, and Performance' and co-edited *Prometheus 04.*

Ashayeri served as co-principal investigator for the development of design codes and prototypes for energy-efficient buildings that received a grant from the Ministry of Road and Urban Development and was published by the Vice Presidency for Strategic Planning and Supervision of Iran. He has received several National Science Foundation grants for attending research workshops, including the 2019 NSF-NHER and Wall of Wind Experimental Facility User. He also completed other research agenda development workshops, including the 2017 U.S. DOE Envelope and Windows Roadmap. Ashayeri has practiced as an architect, project manager, and team R&D leader at several architecture and design-build firms in New York City, Chicago, and Tehran. He has worked on projects ranging from large-scale and tall building design to highly detailed design development for landmark projects.

Ezgi Bay is an educator, architect, and researcher. Currently, Bay is an Adjunct Professor at Illinois Institute of Technology (IIT) College of Architecture. Bay holds a M.Sc. in Architectural Design from Istanbul Technical University, Turkey (2013). Bay's research interests lie at the nexus of built environments, sustainability, and digital technology, and she works on research projects on sustainability and energy efficiency in housing, the interactions between climate and human thermal comfort, and collaborative and participatory design practices. Her doctoral dissertation, entitled "The Spatial Block: Natural Ventilation in Hot and Dry Climates of Turkey," uses digital data analysis, CFD and energy simulation (using IES-VE), and parametrization (with Grasshopper) to identify the energy-related design problems in existing projects and develop climate-responsive residential typologies in hot and dry climates. The core of her research is the analysis of the data about the interrelations between thermal comfort, air flow, energy use, and architectural design.

Throughout her academic and professional career, Bay received several prestigious awards, including a Graduate Scholarship by the Turkish Government, Illinois Institute of Technology Graduate Scholarship, Race to Zero Student Design Competition award organized by the U.S. Department of Energy in 2017. Bay has served as the co-organizer of the IIT's 4th PhD symposium, Buildings, Cities and Performance, II, and the co-editor of the 4th issue of the IIT PhD Program's journal, *Prometheus.* Bay was selected as the only student representative in the NSF-funded Workshop on Architectural Faculty in Environmental Sustainability Research (WAFES) in Toronto in 2019. Bay also served as the IIT's student delegate at the 2019 Pritzker Forum on Global Cities, held in Chicago.