MAHJOUB ELNIMEIRI

Professor, Founder and Former Director of the PhD Program in Architecture, College of Architecture, Illinois Institute of Technology, 1996–2013

[MP] As the founder of the PhD program and its director for about two decades, please share with us a brief history of the program and tell us what made the college decide to establish a PhD Program in Architecture in Chicago in the late 1990s.

[ME] Originally, the initiative of a PhD Program came from a collective will among international master's students from IIT, which were willing to develop research in the United States and bring this knowledge back to their home countries. After the creation of a PhD Program, most of them would be able to apply for doctoral scholarships from federal governments in their homelands. Besides, holding a PhD degree would give them more opportunities for teaching and developing research in their home countries.

Therefore, I moved this idea forward, and after visiting some of the important architectural graduate programs in this country, such as MIT, Harvard, UC Berkeley, and Georgia Tech, I concluded that our PhD program could explore research in Architecture, but with close interaction with engineering and technology (i.e., a program that should focus on architectural inquiries, but utilizes engineering and scientific methodologies). The idea for this type of research seemed to be consistent with the great legacy of Mies van der Rohe. As you might have known, at that time, we had a wonderful master's thesis program, led by Myron Goldsmith and David Sharpe, which I must say, had a big influence on my thinking about the PhD program. With the help and support of some IIT faculty, within and outside our college, I was able to establish the program. Finally, I would like to add that we managed to attract a good number of excellent students, who had produced significant work and continued to advance architectural research after graduation.

[MP] Professor, you mentioned that in the beginning the goal was to develop doctoral research in the United States, and then spread this knowledge to other countries. But why did some of the architectural firms in Chicago start to be interested in the research developed at IIT?

[ME] Our first research projects evaluated the structural components and energy efficiency of high-rise and large-scale buildings. We tabbed on the rich resources of the master's thesis program, that I mentioned earlier. Look at Edward Windhorst's book *High-rise and Long-span Research at Illinois Institute of Technology: The Legacy of Myron Goldsmith and David Sharpe* (Chicago: Illinois Institute of Technology, 2010). The program at IIT had wonderful instructors, who were all practicing architects and engineers, such as the architects Goldsmith and Sharpe, and the engineer Fazlur Kahn. At that time, these three faculty members were working at the architectural firm Skidmore, Owings & Merrill (SOM). I had the pleasure and the honor to join them toward the tail end of the program. SOM and IIT during that time were at the forefront of many significant high-rise advances worldwide. Due to the availability of commissions in Chicago for high-rise buildings, many local firms naturally hired IIT students that were doing research in this area. After all, we realized that doctoral research would eventually become one of the legacies of our school.

[MP] You are an engineer by education and training with expertise in structural engineering. You have also been an Associate Partner at Skidmore, Owings & Merrill, prior to joining IIT College of Architecture as a faculty member. How did you see the overlap between architecture and engineering and how should the PhD students in Architecture address that?

[ME] The complete integration of architecture and engineering can lead to a rational shape of a building or an object. In the case of the collaboration between architects and engineers, there is the emblematic example of Mies and the structural engineer Frank Kornacker; the latter was also a friend of Mies. Due to such cooperation, buildings like S. R. Crown Hall (1950–1956) could achieve elegant proportions. Currently, I believe that the architectural profession is reaching a moment of crisis, meaning that the form of the built environment is moving away from structural and non-arbitrary concerns. Moreover, issues of climate change and clean energy became serious matters that cannot be dealt with based on irrational and non-engineering logic, but only on an earnest partnership. Therefore, this is an opportunity for PhD students to work on the benefits from this collaboration between architecture and engineering, which can influence a shift in a more interdisciplinary curriculum of schools and the future of higher education.

Interview conducted by PhD Candidate Marcos Petroli, January 14, 2019.

HARRY FRANCES MALLGRAVE

Distinguished Professor Emeritus, Former Director of the PhD Program in Architecture, College of Architecture, Illinois Institute of Technology, 2013–2014

[MP] As director of the PhD program in 2013, you initiated the specialization in History, Theory, and Criticism (HTC). Why did you select the HTC track, and what does this specialization add to the PhD program?

[HM] The HTC specialization has always been the centerpiece of a doctoral program in architecture, although with some interesting nuances. In the 1960s one of the few schools to offer a PhD program was Cambridge University, and its orientation was history and theory, as seen in such early graduates as Peter Eisenman and Reyner Banham. I believe the first American programs in HTC appeared in the 1970s. Cornell University, under Colin Rowe, had a focus on urban planning, as did MIT with its Urban Institute. The first program at Princeton had a sociological orientation, but that changed when Anthony Vidler arrived in the 1970s with his interest in theory. At the University of Pennsylvania there were two programs in the late-1970s: one in history/theory and the other in urban planning. When I enrolled in the program in 1978, however, there was only Marco Frascari and myself in the HTC program and no one in the other.

The PhD Program at IIT, founded in the 1990s, was unique in that its focus was neither HTC nor urbanism, but based on tall-building design and engineering. It also had a special partnership with Skidmore, Owings & Merrill, which often allowed doctoral candidates first-hand experience in the workplace. As the evolution of more sophisticated computer modeling began to take over the structural engineering of tall buildings around the turn of the century, the program, under Mahjoub Elnimeiri, began to make a transition into energy-efficiency or green design-technologies.

When Wiel Arets assumed the deanship in 2012, he, with his European background, ask me in the following year to introduce an HTC component to the program. There was an interesting quandary, however. Whereas deep historical analysis of any person or topic will always remain a viable field of study, both theory and criticism—in my view—had collapsed around the turn of the century through the excesses of semiotics, poststructural, and postmodern thought. The Dutch, however, also had a somewhat unique position with respect to theory, with the humanistic legacy of architects such as Herman Hertzberger and Aldo van Eyck, the last of whom I worked with at Penn. This legacy has sometimes been portrayed as structuralism (stemming from van Eyck's admiration for the anthropologist Claude Levi-Strass), but the word is totally misleading with respect to how these architects placed such a high value on the human experience of design. I believe we have a comparable field of study emerging today with the newer phenomenological models stressing the dynamic and mutual interplay of the human organism with the environment in both its social and physical dimensions—predicated on the latest biological modeling of perception and its emotional underpinnings.

[MP] How do you see the availability of numerous primary sources and iconic buildings in Chicago contributing to the quality and the variety of research topics?

[HM] Traditionally, doctoral research on historical themes has not been tied to a specific location, but it is often done through access to archival materials. In my case of doctoral research, I consulted archives and libraries in Zurich, Dresden, Hamburg, and London. It of course helps to have these materials nearby, but today a good percentage of these types of documents are available on the internet. One can, of course, offer a fresh perspective on the history of Chicago architecture, but the amount of historical research that has been done on figures such as Sullivan, Wright, and Mies make it very difficult to uncover something new, which is the essence of doctoral research. There are, however, new themes within Chicago that might be explored. The other thing to take note of with respect to historical research is that it is always situated within a larger international context. This is especially true today, but also in the past. Hence, historical research demands a reading facility with several languages. All doctoral research goes online, and a poor dissertation is readily known to everyone knowledgeable in the field.

One of the good things about the PhD program at IIT is that so many of its students come from other countries, and they bring their different cultural perspectives with them. I am quite sure this legacy is continuing under Michelangelo Sabatino, and a thriving PhD program is one that is strong in several different areas.

Interview conducted by PhD Candidate Marcos Petroli, February 6, 2019.

MICHELANGELO SABATINO

Professor and Director of the PhD Program in Architecture, former Dean, Inaugural John Vinci Distinguished Research Fellow, College of Architecture, Illinois Institute of Technology, 2014–2017; 2019–

[MP] You directed the PhD program between 2014 and 2017 up until your appointment as Dean of the College of Architecture. What are some current challenges to the profession and academia that you think doctoral research in architecture should address?

[MS] Opportunities in the form of challenges abound. With climate change increasingly a daunting reality, applied research initiatives should be directed to minimize the carbon footprint of our new and existing building.

Dr. Rahman Azari, the current director of our PhD Program, is well equipped to lead this area of research with his interest in materials, skins, buildings, and cities. Architects and engineers should bring their distinct strengths when working collaboratively on buildings that are simultaneously beautifully designed and high performance. I believe Tesla automobiles are the gold standard because beautiful design coexists with sustainable technology. Dr. Brent Stephens, the Chair of the Department of Civil, Architectural, and Environment Engineering (CAEE) in IIT's Armour College of Engineering, continues to play an active role in mentoring our students.

As far as history- and theory-based scholarship is concerned, I believe that interdisciplinary investigations seeking to illuminate the complex relationship between architecture and cultural, economic, political, and social forces of the past can help us better understand the complex challenges of the present and future.

[MP] As an architectural historian who relocated here in 2014, a little more than four years ago, what do you think are opportunities to rewrite the history of Chicago's buildings and sites? Is there anything more to say about Ludwig Mies van der Rohe?

[MS] We refer to the writing of history as historiography because understanding the past not only requires gathering facts but also interpreting events and ideas. There are numerous scholarly books about Ludwig Mies van der Rohe that focus on various aspects of his distinguished career as educator and architect; however, a missing perspective is a study focused exclusively on the work he produced in the Chicagoland from his arrival in 1938 to his death in 1969. With few exceptions, such as the Barcelona Pavilion (1929) and Tugendhat House (1930) in Brno, one could argue that his most consequential work—his IIT campus and buildings, Farnsworth House, and 860–880 Lake Shore Dr.—were realized in the Chicagoland.

By carefully analyzing three decades of sustained practice in his adoptive city, perhaps we can discover ways in which local conditions impacted the design and realization of buildings that had a global impact. It is worth recalling the proximity of Gary, Indiana, where steel was produced during the post-World War Two years while European cities and ports lay in ruins. Focusing on local approaches to building and construction might shed new light on Mies' design process. As I have learned from my ongoing research, local conditions reveal circumstances and dynamics behind the design and realization of the IIT campus within the Bronzeville neighborhood.

[MP] Under your leadership, the Architecture Research Forum lecture series was launched along with the inaugural PhD student-run symposium Petroleum Modernism: Architecture and Identity in the Gulf, which was held on October 13, 2016. How do you see the PhD program benefitting from an annual student-run symposium and *Prometheus, Journal of the PhD Program in Architecture*, the accompanying peer-reviewed publication?

[MS] As an educator and academic leader, I believe it is very important to empower our PhD students to organize and host an annual peer-reviewed symposium because it provides experience for those who pursue academic positions. Writing calls for papers, evaluating abstracts, and curating and editing content for publications are all tasks that require excellent written skills. Hosting a symposium requires communication and organizational skills. Cumulatively, organizing and hosting symposia develops a skillset that is important if one wishes to thrive in academic research environments.

[MP] When you were appointed as the new director of the PhD program, you promoted the idea of a research environment that explored the intersections among Architecture, History, and Technology. Please explain.

[MS] Since IIT is a science and technology-rich university, soon after I was appointed director, I began to think of ways to strategically leverage this tradition to shape the kind of research we can conduct in our PhD program in architecture. History can illuminate the ways in which we understand the relationship between technology and architecture. Architects typically gravitate toward qualitative research approaches and engineers toward quantitative ones. I like to recall Peter Rice's distinction between the "inventive" engineer and the "creative" architect (see his "The Role of the Engineer" in *The Engineer Imagines* (London: Artemis, 1994). We should foster a research environment in which the two approaches can find mutual support.

Interview conducted by PhD Candidate Marcos Petroli, December 20, 2018.

RAHMAN AZARI

Assistant Professor, Former Director of the PhD Program in Architecture, College of Architecture, Illinois Institute of Technology, 2017–19

[MP] Please tell us about the Technologies in Built Environment (TBE) track of the PhD program. How does this track overlap with the History, Theory, and Criticism track (HTC) of the program?

[RA] Technology has been the center of architecture throughout history; and the history of architecture is the history of how architects translated the era they lived in, with all its features from culture and religion to social and technological developments, into buildings and space. I believe the research in technology and history are closely tied and interrelated. Technologists and technology researchers need to know about the history in their field as they build upon the past developments to create new ones. Without knowing the history, the researcher in a technology field runs the risk of re-inventing the wheel. One needs to know the history to understand what has been done and what has not been done in their area of research, and what is the level of sophistication in existing knowledge and developments, that is available to them to use and to build upon. That is why PhD students must do a "literature review" in the early stages of their research. Literature review is a survey of the past and present knowledge. Learning about history also helps the researcher provide insight into how social, technological, economic, and ecological developments have interacted in the past; therefore, it widens the researcher's view of the scene. In my opinion, a research project cannot start without the researcher first becoming kind of a historian in a broad, rather than discipline-specific, sense. On the other hand, a historian can connect the dots and explain how social and technological developments in the past were related, what caused them and how they affected other developments that happen after them.

[MP] What are the current challenges and opportunities of the PhD Program? And how do you think that the PhD community can help?

[RA] Our challenges are not unique to us. A main challenge, I believe, is to convince the PhD students to take intellectual risks and challenge themselves to go beyond their intellectual comfort zone—to go beyond their field and look into complex problems that would need interdisciplinary approaches to be solved. Unlike engineering or science, architecture students often work on projects that are not funded by external grants. This means that students would need to be more proactive in developing doctoral projects that are interdisciplinary in both scope and methodology.

[MP] The PhD program's 3rd annual symposium focused on Buildings, Cities, and Performance. What do you think the emergent areas of research within the field of building technology are?

[RA] I believe we're experiencing a shift in sustainability research toward looking into problems from an urban lens. The various areas of urban sustainability research, I think, need to integrate to help solve the problems of cities in more holistic ways. We came up with "Buildings, Cities, and Performance" as a brand for the 3rd and 4th symposiums to emphasize the multiple scales of environmental problems we are dealing with.

[MP] As the former Director of the PhD Program and an active scholar, how do you see that the future research in applied sciences can benefit both the academic and professional worlds?

[RA] The field of applied science is defined by its aim to solve research problems of the modern world with practical solutions. Some important, and immediate, problems that currently need to be addressed are climate change, global warming, and growing energy use. So it's vital for researchers and PhD students to understand how built environments contribute to these problems and how we can solve them creatively, holistically, and in collaboration of other disciplines. We, as architecture researchers, have a responsibility toward achieving carbon-neutral cities.

Interview conducted by PhD Candidate Marcos Petroli, September 28, 2019.

PHD DIRECTOR BIOGRAPHIES

Professor Mahjoub Elnimeiri worked with the architectural and engineering firm Skidmore Owings & Merrill (SOM) in Chicago, from 1979–1990. During his vast experience at SOM, he worked closely with architectural partners in the design development of many outstanding projects. After leaving SOM as an Associate Partner and Senior Structural Engineer, he joined the Illinois Institute of Technology in Chicago as a full professor with tenure in the College of Architecture, a position he has held since 1990. In 1997 he founded the PhD program in Architecture, and directed it until 2013. He brought to the college significant research funding through research and design projects. He also expanded the research to include issues of sustainability, material technology, and energy. He is the Founder and President of Eeciplus Engineers International, in Milwaukee, Wisconsin, (1991 to present). Eeciplus is a progressive, cutting edge, state-of-the-art structural engineering practice, specializing in the area of high rise and long span. Professor Elnimeiri has been a registered professional engineer since 1978. He is a member of many international professional societies and organizations, and author of many publications. He is a frequent participant in international conferences, including being a keynote speaker numerous times. He occasionally contributes to the media, through articles or interviews in newspapers and appearances on public television. He is a recipient of a few prestigious awards, such as the ASCE state of the art award, 1988.

Prof. Elnimeiri holds: BSc (Honors) in Civil Engineering from University of Khartoum, Khartoum, Sudan. D.I.C. and MSc in Structural Engineering from Imperial College, University of London, London, United Kingdom. PhD in Structural Engineering and Structural Mechanics from Northwestern University, Evanston, Illinois.

Harry Francis Mallgrave is a Distinguished Professor Emeritus from Illinois Institute of Technology and an Honorary Fellow of the Royal Institute of British Architects. He received his PhD in Architecture from the University of Pennsylvania and has enjoyed a career as a scholar, translator, editor, and architect. In 1996 he won the Alice Davis Hitchcock Award from the Society of Architectural Historians for his intellectual biography of Gottfried Semper. He has published more than a dozen books on architectural history and theory, including both monographs and histories of theory. His last three books have dealt with the insights made by the new humanities and biological sciences into how we experience architecture through the process of embodied simulation. He is currently at work on a book tentatively titled *Building Paradise*, which will be a historical review of how the notion of paradise—from the garden to the city—has been interpreted by architects and others. If the idea of utopia has always been the imposition of a social superstructure to correct human shortcomings, the idea of paradise (raised in the writings of Alvar Aalto) is rather an inner yearning for a better life, environment, and happiness.

Michelangelo Sabatino trained as an architect, preservationist, and historian. Professor Sabatino 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 post-doctoral 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 with Ben Nicholson, *Avant-Garde in the Cornfields: Architecture, Landscape, and Preservation in New Harmony* (2019). michelangelo-sabatino.com

Rahman Azari is an assistant professor, former director of the PhD program, and founding director of Building and Urban Environmental Modeling (BUEM) Lab at Illinois Institute of Technology College of Architecture. Azari's research centers on environmental life-cycle impacts of built environments, innovative materials for energy production and carbon sequestration, and urban environmental modeling. In 2018, Azari received the American Institute of Architect's prestigious Upjohn research grant for his collaborative invention of "Artificial Leaf-based Façade Cladding Systems for Energy Production and Carbon Sequestration." In 2019, Azari was listed as "Researchers to Know" by the Illinois Science and Technology Coalition. Azari has extensively published research in various journals such as *Energy and Buildings*, *Building and Environment*, and *Journal of Management in Engineering*. He has also guest-edited the journal of *Energy and Building's* special issue on "Embodied Energy and Carbon Efficiency." Azari is also a recipient of several teaching awards in the field of sustainable design. For two consecutive years in 2016 and 2017, Azari served as faculty co-sponsor to student design projects winning COTE Top Ten competitions by the American Institute of Architects (AIA) and the Association of Collegiate Schools of Architecture (ACSA). In 2016, Metropolis magazine listed a course co-taught by Azari as one of the "7 best sustainable design courses in America." This selection was made based on the results of Architecture 2030's Curriculum Project's competition.

With a background in architecture, Azari holds a PhD in Built Environment (Sustainability track) from the University of Washington in Seattle (2013).