PART III

ESSAYS & INTERVIEWS

Autumn View: looking west of
Alfred Caldwell's Promontory
Point Park towards the
Atwood- and Burnham-designed
Museum of Science and Industry
(background) and an under-
construction Obama Presidential
Center. Photo courtesy of
Alejandro Saldaña Perales.

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GENERATIVE DESIGN: A COMPUTATIONAL WORKFLOW OPTIMIZING ENVIRONMENTAL AND SOCIAL PERMEANCES OF CITIES

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. Therefore, the problems involved in this urbanization process are becoming extremely complex and require collaboration across disciplines. Addressing these challenges requires the participation of a variety of stakeholders, who often represent conflicting requirements and interests, but traditional design methods struggle to address this complexity. Therefore, new methods and tools are very much needed to better support urban designers in addressing various environmental, social, and economic challenges.

In recent years, many researchers and designers have developed a generative design approach, which is a framework that involves the integration of a rule-based geometric system, a series of measurable goals, and a system for automatically generating, evaluating, and evolving a very large number of design options. This intelligent design process normally involves three different types of tools: (1) parametric design software to model the geometry and space of all possible design options; (2) simulation software to quantify the performance of the metrics set for each design option; and (3) analytical platform to filter large groups of design options to identify the highest-performing options. Based on the nature of the urban design process, which is multi-objective, evolutionary algorithms have been recently used in generative design processes to solve complex design problems. A Philadelphia-based case study was conducted through an evolutionary algorithm with three design objectives: (1) increasing the openness of the areas adjacent to a historical landmark building; (2) increasing green spaces; and (3) increasing the solar exposure on the ground level in winter, shown in Figure 1.

The algorithm ran a population comprised of 500 generations with 15 iterations in each generation via Wallacei, totaling 7,500 iterations. Figure 2 shows an overview of the algorithm results. As the mean value trendline shows, the simulation was successful in improving the mean values for Design Objectives 1 and 3 (view access and solar exposure), but the variation of solutions was fluctuating throughout and not converging towards an optimal result for Design Objective 2 (green space). In other words, the simulation was more effective in finding the "best performing solution" for the Objectives 1 and 3 out of the total 7,500 iterations.

The process selection started with filtering the entire population (e.g., 7,500 iterations) down to a significantly smaller pool of solutions by selecting pareto front solutions. Figure 3 shows the selected solution pool for the final comparison and evaluation.

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Dr. Peng Du is currently an Assistant Professor and Director of both Master of Urban Design (MUD)-Future Cities Program and M.S. in Geospatial Technology for Geodesign at the College of Architecture and Built Environment at Thomas Jefferson University in Philadelphia. He has also served in several important roles at the Council on Tall Buildings and Urban Habitat (CTBUH), including Director & Board Member of the Asia Headquarters, and a Co-Chair of the Council's Academic & Teaching Committee. Dr. Du's research focuses on net-zero buildings and cities, computational urban design, urban energy modeling, and urban data analytics, incorporating interdisciplinary approaches. His research has received broad media coverage by venues such as

Curbed, CityLab, and Smart Cities World. Dr. Du's current research centers on using data-driven and simulation-based tools to examine the relationships between urban form and environmental and social performance parameters in the context of high-density cities, such as building energy-use intensity, daylight availability, outdoor thermal comfort, visual interest, green space, and solar energy potential. Dr. Du has published several books and numerous peer-reviewed articles, including co-editing a book titled Sustainable High-Rise Buildings: Design, Technology, and Innovation, published by the Institution of Engineering and Technology (IET). Prior to joining Thomas Jefferson University, Dr. Du taught at Texas Tech University and the Illinois Institute of Technology. In addition, he has taught studio modules and organized international workshops at Tongji University in Shanghai periodically. Dr. Du is a LEED-Accredited Professional, Dr. Du is a LEED-Accredited Professional and WELL-Accredited Professional. He holds a PhD in Architecture from Illinois Institute of Technology and an M.Arch from Tongji University.

PRESENT–DAY CHALLENGES TO ECOLOGICALLY CONSCIOUS ARCHITECTURE AND URBAN DEVELOPMENT

"The German architect and theorist — Gottfried Semper — located the origin of architecture in fire, but contact with arid or tropical regions might have made him broaden his genetic or genesiac repertoire to include shade; instead of the primitive blaze that illuminates and warms, the vegetal vault that protects against solar radiation."

In the insightful essay "Semper in Gando: a Practical Aesthetic," featured in AV Monographs 201, Luis Fernández-Galiano explored the architectural contributions of Francis Kéré, the 2022 Pritzker Prize winner. Kéré, a Burkinabé-German architect, employs local materials, traditional building techniques, and collaborative design processes with the indigenous community to develop buildings deeply rooted in African aesthetics and sustainability principles. His architectural endeavors not only respond to the environmental demands of hot and arid climates but also prioritize the cultural and social contexts of the region. While Kéré's designs may eschew ostentation, they epitomize a crucial and authentic response to the region's exigencies, offering adequate comfort while minimizing reliance on modern building technologies. Fernández-Galiano characterized Kéré's work as embodying "necessary beauty," diverging from Gottfried Semper's conventional notions of architectural elements.

In contrast to Kéré's contextual approach, contemporary architectural design often adheres to more conventional paradigms. Buildings are frequently engineered to insulate themselves from external climatic conditions, relying heavily on mechanical systems for indoor environmental regulation. This conventional approach incorporates advanced building technologies designed to reduce the energy consumption of buildings, thereby lowering their environmental impact. Furthermore, state-of-the-art renewable energy systems are integrated into buildings as discrete additive components. While this technology-centric approach has made significant strides in advancing sustainable architecture, it presents challenges. Despite advancements in sustainable materials and energy-efficient systems, a substantial gap persists in their accessibility and efficacy. Moreover, such a reliance on technological solutions risks further isolating buildings from their surrounding environments.

The concept of sustainability within the built environment has evolved, transitioning from a narrow focus on energy efficiency to encompass a wider array of considerations that reflect the intricate relationship between buildings and their ecological, social, and economic contexts. This change marks a shift towards a holistic approach that not only sets numerical targets for energy consumption but also emphasizes the principles of accessibility, equity, and inclusivity. Such an approach acknowledges the profound influence that buildings have on communities, aiming to tackle social disparities and environmental challenges in a cohesive manner.

The contemporary dialogue surrounding ecological building design extends beyond the mere adoption of green technologies or materials. It advocates for the creation of spaces that are equitable and accessible to all members of society, regardless of their socio-economic status. This inclusivity involves the development of cost-effective design strategies and the utilization of materials that are not only environmentally friendly but also widely accessible to diverse communities. The primary goal is to shift sustainability from being a privilege exclusive to the affluent to a standard practice that benefits the entire spectrum of society.

Moving towards this more inclusive and equitable approach requires consideration of a broad spectrum of factors. It demands a commitment to reevaluating priorities in architectural design and urban development. This reevaluation is essential to ensure that sustainability in the built environment becomes a comprehensive, integrated effort that serves all stakeholders and fosters healthier, more resilient communities.

Author

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Youngjin Hwang is a designer, building scientist, and Assistant Professor of Architecture at Illinois Institute of Technology (IIT). His research focuses on environmental building design and technology, exploring the intersection of architectural design, thermodynamics, and building technology, with an emphasis on sustainability in the built environment. His expertise spans climate-adaptive building technologies, renewable building energy systems, and architectural design harnessing thermodynamics and renewable environmental forces.

He holds a PhD in Architectural Sciences from the Center for Architecture, Science and Ecology at Rensselaer Polytechnic Institute and completed his Master's degree at the University of Pennsylvania, where he studied environmental building design. Before joining IIT, he served as an Assistant Professor at the University of Oklahoma. His work has been presented at renowned international and national peer-reviewed conferences and widely exhibited, including Tallinn Architecture Biennale, NYC Wanted Design, Seoul Architecture Festival, and KIA International Competition.

TREES AND MONSTERS

Over eighty percent of the biomass on Earth is plants[1] and, as Emmanuele Coccia writes, "We barely speak of them and their name escapes us."[2] However, I know the names of some of the plants in my life — mostly trees: *Liriodendron tulipifera, Prunus subhirtella, Gleditsia triacanthos, Punica granatum, Magnolia denudata, Pinus pinea, Nyssa sylvatica, Quercus velutina, Populus deltoides*, among others. These trees are the traces of my own life and career as a landscape architect: boyhood walks in the Indiana forests, living monuments in Japan, "modernist" campus trees, gardens of Suzhou, the supercanopy of Rome, coastal ponds of New England, and adult walks in the Indiana Dunes.

I know individual trees. Usuzumi-zakura is a cherry tree in rural Japan whose "pale India-ink-colored petals" have inspired veneration for over 1,700 years. The Betsey Williams Sycamore at Roger Williams Park in Providence, Rhode Island, is memorable for a single long, horizontal branch that remarkably crawls for over fifty feet just above the ground. The oldest tree in Paris is an American tree, *Robinia pseudoacacia*, planted by the royal French gardener, Jean Robin, after whom (along with his son, Vespasien Robin) Linnaeus named the genus.

I know something about trees, but I am in awe of others, like the Amazonian *el nombrador de plantas*, the "keeper of plant knowledge," Abel Rodriguez. "I learned about the forest the hard way: I had to be awake for long hours at night, I had to lend my ears to the elders and make special diets. Our learning was a spiritual process; that is why we consider knowledge as very valuable."[3]

Forests are, as the author Robert Pogue Harrison wrote, "The Shadow of Civilization."[4] Harrison outlines this through the writings of the Neapolitan philosopher Giambattista Vico. Harrison writes, "To burn out a clearing in the forest and to claim it as the sacred ground of the family — that, according to Vico, was the original deed of appropriation that first opened the space of civil society." For Vico's "giants," the forests hid the sky — and therefore they hid the prospect of god. The forests were monstrous.

The flora of the future city must "make systems" and "host life" as explored by graduate students in Landscape Architecture + Urbanism at IIT in the Fall 2023 in collaboration with the French urbanists and architects, ChartierDalix. The flora of the future city can replace highways with living "corridors."[5] It can thrive in subterranean gardens of clay, perch on south-facing sills of skyscrapers, and crawl across roofs of obsolete parking garages. The flora of the future city is monstrous — but monstrous like Frankenstein — both terrifying and endearing.

The Garden of Clay, by Jincheng Chen (MLA '24).

References

1 https://www.weforum.org/agenda/2021/08/total-biomass-weight-species-earth/. Downloaded 2/12/2024

2 Coccia, E. 2019, *The Life of Plants: A Metaphysics of Mixture*. Polity Press, p.3

3 Aristizábal, I., 2020, Abel Rodrigues, exhibition catalog, BALTIC Centre for Contemporary e

4 Harrison, R.P. 1992, *Forests: The Shadow of Civilization*, University of Chicago Press

5 Dromstad, W. Olson, J., Forman, R., 1996, *Landscape Ecology Principles in Landscape Architecture and Land-Use Planning*

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Professor Ron Henderson is an international leader in Landscape Architecture design, history, research, and education. His broad range of current research includes landscape-based urbanism, garden and contemporary landscapes of China and Japan, and global indigenous practices of arboriculture. His research on urban healthy water equity and the urban design implications of autonomous vehicles in The Driverless City Project is supported by $1.5m National Science Foundation funding. His recent book, 30 Trees, was published by Birkhauser. His scholarship on Asia also includes his book, The Gardens of Suzhou, co-translator of Peng Yigang's seminal Analysis of Classical Chinese Gardens, and co-editor of a recent special issue on Chinese gardens and landscapes for Studies in the History of Gardens and Designed Landscapes. He is founding principal of LIRIO Landscape Architecture with award-winning work in Europe, Asia, and North America. Current work includes conservation of legacy trees at Dumbarton Oaks, Roger Williams Park, the Caldwell Farm, and the United States National Arboretum that also hosts his exhibition, Sakura Orihon, which received the Honor Award for Communication from the American Society of Landscape Architects. He is inaugural Director of Research for The Alphawood Arboretum at Illinois Institute of Technology.

ARCHITECTURAL STRATEGIES TOWARDS ECOLOGICALLY CONSCIOUS CITY–MAKING

Many tall buildings in densely populated cities are on the rise around the world to accommodate rapid population growth and massive urbanization. Tall buildings and vertical urbanism are increasingly considered to be the most viable solution for the major shift of population from rural areas to major cities, rather than the unsustainable horizontal spread of cities. Therefore, the environmental impact of tall buildings has become an increasingly important consideration for ecologically conscious city-making. However, many tall buildings are not truly sustainable even though some of them are LEED-certified by adopting energy-efficient MEP systems, high-performance glass, etc. There are also important but invisible factors other than environmental impacts, which need to be taken into account to achieve sustainability, such as occupant experience, health, productivity, emotion, etc. These factors can be improved by properly designed building forms, indoor/outdoor spaces, and facades that respond to surrounding buildings/spaces and climatic conditions, and promote the interaction with nature (i.e., the external environment). Moreover, they potentially make a positive social, cultural, and economical impact on a city due to the site-specific design.

Natural ventilation has proven to be an effective passive strategy in improving not only energy efficiency, but also living and work environments. However, such a strategy hasn't been commonly applied to tall buildings that traditionally rely on single-skin facades, due to the high wind pressure that creates excessive air velocities and occupant discomfort on higher floors. Double-skin facades (DSFs) can provide an opportunity to facilitate natural ventilation in tall buildings, as fundamental components such as the additional skin and openings create a buffer to regulate the direct impact of wind pressure and the airflow around the buildings.

The cavity between two skins can not only act as a thermal flue, airflow path, and thermal buffer depending on the DSF typology, but also become an "inhabitable" space that provides community spaces (e.g., social/meeting spaces, urban/vertical farms, sky gardens, etc.). This interstitial space can be semi-outdoor and enclosed mostly by glass walls in case the space is naturally ventilated through openings on the outer skin of DSFs. The adjacent indoor spaces to the cavity are thermally protected from direct sunlight, high wind pressure, and high/low temperatures, but importantly, the thermal condition can be also relevant to provide semi-outdoor environments to occupants on higher floors where they possibly feel isolated or disconnected from the city or external environment. This brings psychological benefits of utilizing operable windows to occupants as the occupant control of windows assist them tolerate a relatively wide range of temperatures, in case fresh air is drawn into the adjacent indoor spaces through the semi-outdoor spaces. Multiple inhabitable spaces of DSFs, located throughout the height of a tall building, can accommodate social events and community programs (e.g., Shanghai Tower), which exhibit properties usually associated with indoor/outdoor public spaces at grade. Additionally, greenery can be incorporated into the inhabitable spaces in many ways as it helps cool down the spaces through evapotranspiration and enhance the visual connection with nature.

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Yohan Kim is a Visiting Assistant Professor and Assistant Director of the Master of Tall Buildings and Vertical Urbanism program in the College of Architecture at the Illinois Institute of Technology (IIT), Chicago. He is also Academic Coordinator at Council on Tall Buildings and Urban Habitat (CTBUH). Kim holds a PhD in architecture and a Master of Architecture, both from IIT. His research centers on high-performance building facades, natural ventilation in tall office buildings, and computational fluid dynamics (CFD) modeling and analysis.

His doctoral dissertation, entitled "The Feasibility of Double-Skin Facades (DSFs) to Provide Natural Ventilation in Tall Office Buildings," investigates the impact of DSF configurations on indoor airflow behavior in tall office buildings and the integration of computational simulation into the design process. He was awarded the ARCC 2022 King Medal for Excellence in Architectural + Environmental Design Research. His areas of interest include sustainable tall buildings, performance-based facade design, double-skin facades, natural ventilation, parametric design studies, and CFD simulation.

MARIA PEIXOTO PERSPECTIVES: THE DEVELOPMENT OF THE URBAN LANDSCAPE

Interview conducted by Alejandro Saldaña Perales, February 2024.

[ASP] What are the challenges that architects and architecture face in the current economic model that drives development in the city?

[MP] I graduated as an architect and urbanist but I don't work as an urban planner. However, even as a Brazilian citizen, I consider myself relatively capable of giving my opinion on the matter. There, after Brasilia, architects became increasingly removed from many decision-making processes in cities. Before that, in Brazil, our profession was considered to possess important knowledge worthy of consideration, but this has been lost in recent decades. Economic forces: big companies and money itself are what are shaping the city. This could be very bad.

For example, I live in a state capital, a city with 1.5 million inhabitants, and we have a large riverbank area in a central and valuable place, which is no longer used as a port. Its reuse has been discussed for 30 years, but nothing has happened to date. There seems to be a constant battle between what the architects propose for the place and what economic forces believe should happen there. In Brazil, architects, urban planners, and people with money do not speak the same language.

[ASP] What is the popular perception of what an architect, or architecture, should be doing?

[MP] I think that the population in Brazil no longer sees the architect as a professional who interferes in the cities or even in the production of buildings. There is no clear knowledge about our work. This is a country that had geniuses like Oscar Niemeyer, Lucio Costa, and Paulo Mendes da Rocha not long ago.

Here in Chicago, ordinary people are really interested in learning about architecture and its preservation. They value the built heritage and their city. Unfortunately, we Brazilians don't have that. Yesterday I gave a lecture to undergraduate students in a small town nearby and presented a brief history of Brazilian modern architecture. Seeing my own slides, I renewed my understanding that our architecture was of exceptional quality. Now, Brazilian students don't even know who Oscar Niemeyer was. This demonstrates the decline of our profession, socially, today in Brazil.

[ASP] In the face of the contemporary climate crisis, what do you think is the next step for architects to take?

[MP] In addition to the Amazon, I think we have a very important topic in Brazil, which is water. We need to take care of that. In Porto Alegre we have a large river, an estuary that is largely polluted. We must solve these kinds of problems. We need to invest in clean technology to deal with new challenges we are facing. In that aspect, I think we have a good tradition and knowledge. Our modern and colonial architecture, since the beginning, dealt with climate aspects. It is good genetics. When we, as architects, are doing a house, a building, and a city, we think about the quality of life in our designs. More than that, unless we are an economically poor country, we are creative enough to come up with solutions besides having almost no money.

But we have to understand this as a moment of reconstruction. We have been without research resources for a long time, and we come from years of discredit in our institutions, in what is done in our universities, in our technology. It is a great process to recreate credibility and show that we can offer answers to these challenges.

[ASP] Is architecture so vulnerable to political changes?

[MP] I think it's super vulnerable. Once again I will give an example from my city. Next to the port I talked about before there was a large strip of unoccupied and underutilized landfill along the river. Two years ago, this border was redrawn. The project may not be ideal, but it introduced a kilometer-long public park that is now widely used by the population and has changed the face of the city.

Sometimes we just have to be lucky. It depends on good politicians, an intelligent business community, and sometimes these things just happen. I don't know if architecture is fragile. I think yes, but at the same time when some conditions exist, we can make a difference. Or at least architecture can make. We must take advantage of these opportunities.

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She has written for architecture magazines and journals and is one of the editors of DOCOMOMO Brazil Magazine; she coordinates research projects and a research group with professors, graduates, and undergraduate students. Since 2019, she has had a CNPq (the federal organ that fosters academic research in Brazil) productivity grant as a researcher.

THE CITY WORKSHOP: POLICE ALTERNATIVES FOR URBANIZATION, THE CITY AS A PROJECT

The contemporary situation offers us an enormous range of questions regarding the reality of urbanization. It is clear that we cannot keep things as they are, as we have consolidated them. The planet is expressing this. There is much discussion, alternatives are sought for our cities at all scales, but it seems that the inertia and complexity of the phenomenon is beyond us. The discussions at this Graduate Student Symposium offer us an important range of reflections.

In this context, a basic contribution is that we must insist on supporting and defending the essential public structure of cities and towns and on promoting the relevance of a multidisciplinary approach to their study, planning and management.

It is still common to look at urban problems on a sectoral basis, which is not only necessary and very important, but it is evident that the structural solutions that can be achieved, in a broader way, require the simultaneous consolidation of an agenda that is at once political, technical, economic and communitarian, always considering our relationship with nature. It is no discovery to mention this.

However, it is necessary to reiterate it, to insist on the evidence in the world, which shows how, even in very critical situations, when societies understand the city as a complex and collective project, and comprehensively address its management, significant and even exceptional progress is achieved, as evidenced by well-studied and very different cases such as Souzhou, Bilbao, Curitiba Sydney or Medellin, to mention a few, among many others.

The tradition of the architectural workshop has shown that the complexity of the most demanding projects can be solved integrally, but it requires highly integrated, articulated and excellent working mechanisms to achieve good results.

Urbanization represents a greater complexity. Forging a large-scale strategy for the city, for the regions, is a priority. It requires very complex political arrangements, with very demanding institutional and budgetary organization, complemented by teams of technical excellence in a variety of aspects and, above all, a high level of coordination and management.

Taking on the management of the city, with the support of a workshop methodology, integrating ideas and proposals with appropriate plans, projects and budgets, seems to be a simple idea. Doing it seriously and rigorously is a good alternative. Combining social dialogue and participatory planning with institutional and administrative structuring, properly concerted public policy formulation, all complemented by multi-scale and multi-sectoral plans, integrated into properly integrated and specially executed or implemented strategic projects, offers a very positive way forward for urban management. This also represents effective opportunities for all social and political sectors and interest groups; it would be a win-win scheme for all of us as a society.

Now is the time to understand the complexity of the problem and its operational requirements. The city is the larger project, and its dynamics demand greater knowledge, extraordinary leadership and collective commitment. There are no excuses.

Author

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Jorge Pérez Jaramillo is an architect, planner, and author based in Medellín, Colombia. With a professional career spanning since 1987, he currently serves as an advisor to the Governor of Antioquia for Planning and Habitat. In March 2020, he joined the Scientific Committee for the Climate Emergency defined by the Governor, and he was selected as a Resident Fellow at the Bellagio Center in Italy by the Rockefeller Foundation in August 2019. He is a member of the Advisory Panel Group of the United Cities and Local Governments (UCLG) and works as a senior consultant for the World Bank.

His experience includes being a Visiting Fellow at King's College, Cambridge, in 2017 and a guest professor at the Institute of Urban and Regional Development (IURD) at UC Berkeley from 2017 to 2019. Previously, he served as Medellín's Chief Planner from 2012 to 2015 and coordinated the winning candidacy of the Lee Kuan Yew World City Prize for Medellín in 2015. Throughout his career, he has held positions such as Dean of the schools of architecture at UPB from 1993 to 2001 and USTA from 2018 to 2019 in Medellín, while also contributing as a professor at various universities. Jaramillo is the author of the book Medellín, Urbanism and Society (2019, Turner Editores Mexico-Madrid).

NO EMPTY SITE

One of the recurring questions in my research, which I ask myself at the outset of each project I undertake as an architect, urbanist, or historian, either in a specific context or more broadly, is: "What is the effect of the past on the present?" This thread of inquiry is one of the few quasi-empirical techniques we have of answering the question: "What will be the effect of our own actions on the future?" I believe it is our duty as architects, planners, or any other kind of urbanist to ask that question before beginning a design for a public project — and to do our best to minimize harm to existing populations, to future populations, and to the environment.

As an educator, I constantly emphasize the key role of "precedents" in studio courses, by which I usually mean projects that have been done by established architects, from which the students can learn in their own proposals for a similar project type. Occasionally someone brings up the idea that "precedent" is a term borrowed from law, and in the context of a house or even a small multifamily project, that observation is simply an ironic one-liner. However, in urbanism, a "precedent" as an event or action with consequences — as in law — takes on more meaning, as I realized when I first started to look at adaptive reuse, my primary field of study, in context.

I began studying adaptive reuse in my master's thesis, as a design problem, at the level of the building, which is already quite complicated — from incorporating philosophies of what should or should not be preserved, to figuring out how to join new building technologies to old. I first had the opportunity to apply my early ideas about strategies of reuse in an urban setting in a study of the Mechanicsville neighborhood of Atlanta, where I was an early career teaching fellow at Georgia Tech. As I always do, I started looking at precedents, this time of adaptive reuse projects of industrial fabric in the United States, and I immediately found what should be obvious — that the locations of such projects have a high correlation with prior socioeconomic decline, and their outcomes often cause radical population displacement and cultural replacement. This context did not nullify my previous research but gave it a new framework and lens. For example, the decision of what to preserve might be made by consulting a totally different group of stakeholders, or at least many additional groups of stakeholders, to reduce the negative effects of bad precedents. Sometimes local stakeholders can even be sources of information on good precedents of reuse and adaptation, which architects and developers might otherwise not discover for themselves.

The effects of the past on the present are often visible and enduring, at all scales. Mechanicsville, for example, was turned into an urban island in the mid-20th century when, due in part to redlining and other "urban renewal" initiatives, multiple highways were built that cut the then mixed-income, mixed-race neighborhood off from its surroundings, eventually turning it into the low-income, predominantly Black neighborhood devoid of parks, groceries, and other services that it is today. Closer to home here in Chicago, the Dan Ryan Expressway running through Bronzeville tells a similar story. Zooming in, on one of the sites I looked at in Mechanicsville, the soil has been so poisoned by the silver-plating factory that last inhabited it, that it will have to be fully excavated and cleaned off-site before any new construction can take place. To the uninformed eye, the lot looks "empty," but as I always remind my students and myself, there is no empty site. My students who chose to tackle that site in my studio at Georgia Tech provocatively proposed to leave the site excavated after the soil was removed and to build a mostly submerged facility, as a scar on the land, a reminder of the after-effects of traditional industry.

We will likely always have imperfect knowledge, but our best hope of achieving spatial and environmental justice as architects is to spend time and pay attention to the effects of our predecessors' work before undertaking our own in good faith.

Author

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Ryan Roark is an architect, writer, and Assistant Professor at the College of Architecture. Her current work takes interest in the adaptive reuse of older and historic structures. Before veering into architecture, she worked in a science laboratory in England while earning a doctorate in oncology from the University of Cambridge.

After graduating from Princeton University with a master's degree in architecture, Roark spent three years as a fellow at Georgia Institute of Technology. Dr. Roark studied Atlanta's history of demolishing viable buildings. Dr. Roark has an MArch from Princeton (2017), a PhD in Oncology from Cambridge (2011), and an AB/ ScB in Math, Comparative Literature, and Biology from Brown University (2005). Moreover, she is a registered architect in the state of Georgia.

DEVELOPING ADVOCACY CAPACITY IN TEENAGERS TOWARDS EQUITABLE URBAN LANDSCAPE

Located at "Black Metropolis" Bronzeville in the South Side of Chicago, the Illinois Institute of Technology (IIT) has taken paradoxical roles in the community. IIT's modern campus expansion (1945–1970) led to the demolition of community buildings and the relocation of the African American residents who had vibrantly lived there since the Great Migration. Underneath Mies van der Rohe's S.R. Crown Hall (1956) still lie the remains of famed Mecca Flats (1892–1952), once home to a thriving middle-class African American community. Meanwhile, in 1988, as the many public investments directed to the South Side eroded neighborhood relations, IIT was awarded a campus enhancement grant and has since been tasked to engage with community involvement and neighborhood redevelopment. As a result, IIT has participated in the physical and economic development of the surrounding community, such as the Mid-South Strategic Redevelopment Plan (1993), the transformation of modern high-rise apartment Stateway Gardens (1958–2007) to mixed-use public housing, and the establishment of partnerships with small businesses to enhance the local economy.

Given that IIT has influenced the urban landscape of Bronzeville in different ways, how can we, as citizens, advocate for a better quality of life through interacting with such a complicated modern site? My visiting research at IIT aims to develop pre-university architecture and preservation education for teenagers in Chicago's South Side. As responsible residents, social media influencers, and potential political actors, teenagers hold significant responsibilities in the built environment (Derr et al., 2013; Nicolescu, 2016; Hung, 2011). They can be encouraged to view the built environment through perspectives based on their daily lives, regardless of their career path (Buxton, 2008). Still, architecture and design may not be a top priority for teenagers compared to practical subjects, such as math and science. However, these fields today are vital in STEAM (Science Technology Engineering Arts Mathematics) education (Rolling, 2016). Given limited educational resources and potential low concern, it is a challenging and multidisciplinary task to understand how the pedagogy of modern architecture can be incorporated into STEAM subjects, which could eventually be a civic education boosting teenagers' advocacy capacity.

Supported by DOCOMOMO Chicago, Chicago Architecture Center, and IIT College of Architecture, this research is being conducted with two Chicago Public Schools (CPS) in the South Side and undergraduate and master-level architecture students at IIT. The activity results will be presented by the CPS students at the Open House of the IIT College of Architecture in early May 2024. The research findings will bridge secondary and higher education, providing civic leadership for teens and community-based professional training for architecture students. Although this research focuses on a modern site, lessons learned will be essential for the South Side community to prepare for today's and future development, which affects their social, economic, and political conditions.

References

Buxton, P. (2008). How cool is that? Designing for young people. *RIBA Journal, 115*(2), 60–62. https://ezproxy.gl.iit.edu/login?url=https://www.proquest.com/scholarly-journals/how-cool-is-that-designing-young-people/docview/554198453/se-2

Derr, V., Chawla, L., Mintzer, M., Cushing, D., & Van Vliet, W. (2013). A City for All Citizens: Integrating Children and Youth from Marginalized Populations into City Planning. *Buildings, 3*(3), 482–605. MDPI AG. Retrieved from http://dx.doi.org/10.3390/buildings3030482

Hung, Y. (2011). The role of the geographical imagination in young people's political engagement. *Environment and Planning A, 43*(3), 578–593. https://doi.org/10.1068/a43165

Nicolescu, R. (2016). The imposition of beauty. In *Social Media in Southeast Italy: Crafting Ideals* (1st ed., Vol. 7, pp. 121–148). UCL Press. https://doi.org/10.2307/j.ctt1gxp4q.9

Rolling, J. H. (2016). Reinventing the STEAM Engine for Art + Design Education. *Art Education, 69*(4), 4–7. http://www.jstor.org/stable/43154669

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Junko Taguchi is a practical, research-based architecture pedagogist focusing on advocacy, public dialogue, and youth education in the built environment. During and after she earned her PhD at the University of Tokyo, she was trained in architecture preservation and education projects in Japan, from urban regeneration to disaster recovery. One of her significant contributions was year-round education program development for children in architect Toyo Ito's NPO. She has since moved to Nagoya, Japan, where she works as an associate professor at the Faculty of Urban Science at Meijo University. Her commitment extends to the publication of architecture education charters by international organizations such as the UIA Architecture and Children's Work Programme and DOCOMOMO International. Based on the DOCOMOMO education charter, she is now conducting a case study with Illinois Institute of Technology's College of Architecture, the Chicago Architecture Center, and DOCOMOMO Chicago, developing a workshop for teenagers on preserving modern heritage on the South Side of Chicago.