

Urban design pedagogy, an interdisciplinary approach

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Abstract

Among the many possible solutions to city form, urban designers are expected to create environments with some human purpose of a social, economic, aesthetic and technical merit. Education at a university graduate school should provide the necessary expertise. Questions like who to educate for a career in urban design and for what type of employment addresses the complex relationships designers navigate to build bridges between economic development, environmental quality and socio-political dynamics. Records show that applicants selecting a professional career in urban design are motivated to improve the prevailing physical, social equity and environmental conditions in cities. This article reports on the institutional prerequisites and pedagogy of an interdisciplinary urban design education sponsored jointly by the departments of City and Regional Planning, Architecture, Landscape Architecture and Environmental Planning in the College of Environmental Design at the University of California at Berkeley.

Keywords: interdisciplinary collaboration, environmental design research, professional silos

1. Cities Embody Both Change and Permanence. The Same Can Be Said About the Education of Those Who Decide to Enter a Career in Urban Design. Some Background.

Standing on the Rue Saint Antoine facing Place de la Bastille in Paris, not only can students of urban design observe the patterns in the pavement and recognize them as the outline of round towers from the historic Bastille fortress that once stood at this location. There are traces in many cities pointing to major or minor societal change. Their symbolic nature can be observed directly, and their clues can be reflected upon. Society might strive for social and physical equilibrium in cities, but such a balance is only temporary. Interpreting change to the form of cities is greatly enhanced when changes are observed and discussed among observers with interdisciplinary and cultural backgrounds.

Standing at Place de la Bastille, an observer might remember that the fortress there was demolished shortly after the events on July 14 in 1789, the date that marks the French Revolution. The observer will read the pattern in the pavement as symbols willfully made with the intent to convey social meaning. There are also plenty of other visual clues that reveal the former eastern wall and the Bastille Gate of Paris. The old moat, the Arsenal Basin, is in plain sight; the Canal San Martín, now under the pavement of the square, is still there, but hidden. The Bastille Opera House dominates the view. The symbolism of the building is hard to miss. The People's Opera, the result of a design competition, was authorized by President François Mitterrand as one of the first great public works after his election in 1980. The opera house, with its already turbulent artistic history, replaced another symbolic structure, the Gare de la Bastille, one of France's early railroad stations. Evidence of the former terminus is the elevated viaduct that still leads to Place de la Bastille. The Promenade Plantée inspired urban designers greatly with the opportunity to creatively reuse a structure from the early industrial age. New Yorkers walking on the former High Line have benefited from the Paris experience.

Urban design is about designing such places, but it is not only about large projects, publicly or privately financed. Students would be extremely fortunate to be assigned a project like the Promenade Plantée during their professional careers. More common in urban design is to work on

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adaptations at all scales, not only at the scale of single projects. Much has been built in cities that need to be reformed or transformed. Frequently, urban designers give new form to places that already exist, may it be a street, an urban district, the urban edge near a body of water, or a new community at the edge of a metropolitan region. Once built, all urban design will be perceived as social symbols, whether that was intended by the designer or not (Appleyard, 1998)¹.

2. The Institutional Requirements Needed for a Successful Urban Design Education

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Academic programs at universities have their own histories. In the decades after WWII, the University of California at Berkeley transformed from its traditional emphasis on the humanities and on agricultural, mining, and engineering to become a comprehensive research university. The war efforts brought new industries to California in manufacturing, but also new strategic disciplines like computation and aerospace technologies. Inevitably, the population grew, and there would be more growth, but the question for the faculty in the design and planning fields was how to intelligently conceive responses to growth. After the years of economic depression in the United States and the destruction of cities in Europe and Asia, design and planning, quite optimistically, called for a holistic redesign.

The term 'Environmental Design came into use to simply mean "to design the world around us" with all its meaning, including the socio-political complexity of a growing region (Sachs, 2018). The call for multidisciplinary cooperation to improve system thinking in design and planning included the social sciences and knowledge of modern technologies. The term environment also includes what it currently means, the understanding of all things that support life as a system. Not squandering natural processes, like land, water, climate, and vegetation, became an important component of design thinking. Natural processes were, and still are, largely of exceptional quality in the San Francisco Bay Area, but they were vulnerable because the socio-political constructs of democratically governing a growing metropolitan region were weak. Little cooperation existed between the nine counties that make up the Bay Area with its one hundred cities and numerous unincorporated towns. For universities to educate students and address such vulnerability, professions tasked with shaping cities and the region received the mandate to innovate professional design and planning approaches.

Up to the 1960s the professional schools of Engineering, Architecture and Landscape Architecture at Berkeley were housed in different departments. Architecture with its home in the College of Arts, Letters and Science was still perceived primarily as an art form, simply because architecture was still the study and practice of eclectic design inspired by sources from antiquity. Already in the 1930s students started to question the relevance of assignments modeled after the Ecole des Beaux Arts tradition in France. Landscape Architecture was administered by the Department of Agriculture and Forestry; City and Regional Planning existed as its own academic discipline only since 1948. The governing body of the university approved a proposal in 1959 that had been made as early as 1943 (Montgomery, 2009)²: the creation of a new college to bring the departments of Architecture, Landscape Architecture and the new Department of City and Regional Planning together into one college, and five years later into one building, the nation's first College of Environmental Design.

Research and teaching design and planning of buildings, cities, and landscapes should be action-oriented to improve what society so casually calls 'urban' and 'nature stewardship.' But while the college organized itself by hiring new faculty members with expertise in the social sciences,

¹ At Berkeley, urban design education began with Donald Appleyard, Professor of Urban Design from 1968 to 1982. His death by accident cut short Appleyard's life at age 54, it also cut short the completion of his work not only in teaching urban design, but also on a book manuscript entitled: Identity, Power, and Place. A key message of the book was about the intentional or unintentional social symbols urban designers create.

² In a chapter on "A Century of Teaching Architecture at the University of California, Berkeley, 1903-2003", Roger Montgomery wrote about a 1943 letter written by William Wurster to the president of the University of California encouraging him to bring together into collaboration architecture, landscape architecture and planning. William Wurster at the time was Dean of Architecture at MIT. In the letter Wurster offered to lead the effort, which was to become the College of Environmental Design.

environmental assessment, law, political science, and system analysis with the aid of computation, the irony was that demolition of urban form was done in the San Francisco Bay Area and elsewhere, under the label of urban renewal. Federal and State funding became available to redevelop neighborhoods and commercial districts that were deemed to be undesirable (Hartman, 1974). In addition, making room for the federally funded freeway construction displaced even larger amounts of residents and would have displaced more, if all freeway construction had been realized according to plan. Imposing a greater new order on the urban structure did not involve much analytical thinking about its consequences. There was no evidence that a new spatial order alone produced good urban form.

Residents of local communities organized in protest, telling city council members not to expect reelection if they voted for the completion of the freeway grid. The famous freeway revolt, first in Berkeley, then in San Francisco was effective and spread to cities nationwide as well as internationally, like Toronto and Copenhagen. Similarly, the United States Army Corps of Engineers met forceful opposition when it proposed filling the Bay up to the line of the deep river channels. The army corps' proposal for additional land to build upon caused outrage. Three Berkeley women organized a movement—still in existence today—called “Save the Bay” (Walker, 2008). Later generations of San Francisco Bay Area residents would consequently label this type of activism as “Nimbyism”. The generation of 1960 activists, however, saw their activities as local involvement against outside interference by the federal government. The large-scale land reclamation would lead to privatizing the waterfront around San Francisco Bay. In the mid-1970s, a broad coalition formed in San Francisco against the extensive growth of office development in its downtown area. International pension funds invested in real estate and created what many saw as a glut of office space. At local elections, proponents and opponents of development battled over public opinion by selectively using slogans like “killing the goose that laid the golden egg,” versus “The Manhattanization of San Francisco.”

3. Concurrent Degree Programs in Urban Design and Environmental Planning

Students and faculty at the new College of Environmental Design became involved in the local and regional discussions. The debate over the changing city and its landscape in the metropolitan context attracted the very best students to apply. For students interested in urban design, faculty at the college initially responded by creating joint degree programs ending in dual graduate degrees. Later, in the late 1980s, concurrent degree programs were established which further eased students' work by simultaneously studying towards two degrees at the same time and finishing with one thesis project (Southworth, 2014). For example, a successful applicant to a two-year Master of City and Regional Planning program could apply, while in the first year of residence, to the Landscape Architecture/ Environmental Planning department and would receive both degrees after an additional year of study in the department's two-year professional degree programs. Later, the concurrent degree program also became available for a Master of Architecture degree with Planning or Landscape Architecture. The advantage for the students was exposure to faculty from the three departments of the college. It attracted students, who went on to careers in government and consulting firms.

The concurrent degree students improved class sizes in the three departments without adding to the enrollment quota set for each department by the university administration. While study fees and tuition were relatively low, students interested in urban design eagerly enrolled in the three-year graduate program. But the low fee structure at Berkeley rose significantly during the 1990s. A three-year stay at Berkeley became a financial burden upon graduation when student loans were due and entry salaries at design firms remained low.

4. Master of Urban Design Degree Program

Reducing the financial burden on students was one of the reasons for starting a separate Master of Urban Design Program. But the guiding reason was to take full advantage of the college's

interdisciplinary potential. The program was started to give a group of students the opportunity to learn about urban design by working on singular problems together with faculty from the three departments. The result would be equally beneficial for faculty and students. Emphasis on design would make planners take a partial leave from abstractions and introduce them to the applied thinking of design. It would encourage designers to have a greater awareness of the social and environmental policy implications without doing harm to their creative thinking.

In the spring of 1995, “The Program in the Design of Urban Places” accepted the first applicants for a 12-month interdisciplinary program of advanced study for students with a prior professional degree and with some professional experience in design or planning offices. Faculty members from the three departments in the College formed a Graduate Group under the Dean of the Graduate Division and under the periodic supervision of the university’s Graduate Council. Because the Master of Urban Design (MUD) degree remained a non-accredited degree, the Graduate Council’s approval was preceded by a successful application to the State of California’s Committee on Tertiary Education.

The new program in urban design was built upon courses that had already been available under the existing graduate degree programs. The MUD program admitted the first group of students in the autumn of 1996. In 2025, after thirty years, the program endured structural changes discussed in more detail later. Core requirements included two design studios, the first offered exclusively for the group of urban design students. For the second studio during the following semester, urban design students had a choice between alternative studios with an urban design emphasis in Architecture, City and Regional Planning, or Landscape Architecture and Environmental Planning. Studio instructors offered design studios with an urban design focus in the three departments and were committed to integrating urban design students with graduate students in their departments. The same integration was available for a mandatory history and theory course.

Students in their first semester also took a design method course that introduced students to systematic observations and empirically testing assumptions about the design of urban form. This course included a wide range of student-selected activities, such as measuring microclimate conditions in the urban environment. Students measured wind speeds at street level between buildings, temperature, and humidity. They fed their data into a computer model that predicts physiological comfort levels of the human body’s thermoregulatory system (Arens & Bosselmann, 1989). While student teams were measuring, team members simultaneously observed pedestrian activities. This allowed students to test causality between observations and measurements.

Other students measured residential densities, added counts of nonresidential uses, and mapped activity levels along sidewalks at different times of the day. The repetition of such measurements on different streets allowed them to establish threshold values of urbanity (Braudel, 1992, p. 484).³ Other students observed how the design of urban space can influence people’s sense of time (James, 1961, p. 150).⁴ They compare the physical distance of a walk and compare the length of the walk to the perception of time by those who took the walk. In comparing a selection of five-minute walks, some walks appeared to take a shorter time if the person walking encountered human activities and visual interest in the surroundings, or longer if few or no people were present and the physical environment was uniform.

Yet other students compare different neighborhood streets by measuring traffic volumes, speed, and noise, and study the benefits of traffic calming by asking residents about their perception of livability in their neighborhood (Craig & Appleyard, 1980).

³ The French historian, Fernand Braudel in his “Civilization and Capitalism”, Volume I, chapter 8 coined the term ‘threshold values of urbanity’. Braudel admits, not that there is agreement on where exactly to place such thresholds, but in relative terms, urbanity can be measured.

⁴ In 1892 William James wrote, “A time filled with varied and interesting experiences seems short in passing but long as we look back. A track of time empty of experiences on the other hand seems long in passing, but in retrospect short.”

The important lesson for the students was to learn about multiple variables that need to be considered when passing judgment about what is good or bad urban form. The list of authors is long who have voiced assumptions about what is good or bad urban form. But many assumptions have gone untested. Like a scientist when searching for facts, rather than opinions, students can make discoveries. Measurement can be taken for qualities for which no established scales exist, but in relative terms, students can learn to place the results of their measurements on a continuum: more here, less there, the worst imaginable, and the best measured. Students were encouraged to use secondary data on demographics, traffic, and economic activities, but found that the available data frequently referred to a larger context and was collected at a coarse-grained level, and rarely in a specific, comparable place.

During the early years of the program, students lacked knowledge in real estate economics, also knowledge of computer applications was lacking. The program added a module in real estate economics and, later, from 2005 onwards, a module in Geographic Information Systems (GIS). The modules could be waived if students had previous knowledge in any of the two subjects. Students' work required intensive advising by faculty members, who also steered students towards a topic that they would like to deepen in their final thesis. During the second semester, students formed a committee by choosing two members from the Graduate Group, plus one outside member, to guide them through thesis preparation. Thesis work consisted of a design component that students completed during the summer months under faculty supervision. Students presented their final work to the next incoming group of urban design students, faculty, and visitors at the end of the summer prior to the beginning of the next term.

5. Student Selection

The Urban Design Program at Berkeley had been approved by the university as a post-professional degree program. Applicants documented their previous degree, a portfolio, letters in support, and a personal statement of motivation. But admission required additional judgments about the choice of professional careers available upon graduation. There was a strong bias among the graduate group members towards educating urban designers who had previous design degrees in architecture or landscape architecture. Those applicants were expected to qualify for employment in urban design consulting firms, but some members of the group also opted to admit applicants with a background in physical planning. The expectation was that program graduates would strengthen planning departments at municipal and regional government entities (Jacobs, 2011).⁵ In a typical cohort of 12 to 15 students, one or two should have a previous planning degree. Initially, the program attracted applicants from across the nation and a few international students. That started to change in later years; Students from 38 nations have completed the program. By the early 2000s, the program could have filled an entire class with qualified foreign applicants from India or China but admitted only up to two students from the same country. While the program enjoyed uniqueness in the 1990s, over time urban design programs emerged elsewhere in the United States and abroad.⁶

6. Conclusion

The success of the Berkeley urban design program can be measured in a number of ways. Judging from the student exit surveys, participation in the program has resulted in a professional identity shift; students with architectural design backgrounds saw a broader application for their creativity. Many learned that design as a decision-making tool had implications for public policy.

⁵ Allan B. Jacobs led the faculty effort to start the Program in the Design of Urban Places together with Donlyn Lyndon and Richard Bender.

Roger Montgomery supported the new program as Dean of the College and asked Michael Southworth and Peter Bosselmann to co-direct student admissions and course sequence. Other founding members included Randolph Hester, Louise Mozingo, Walter Hood, Daniel Solomon and Nezar ALSayyad.

⁶ Notably certificate programs at MIT, Harvard, U of Florida, at the ETH in Zurich, ULC in London. The European Master of Urban Design Program at Delft University of Technology in The Netherlands or at KU Leuven in Belgium, UPC Barcelona or IUAV in Venice, Italy where students start their studies at one of the above universities but are also free to study at a partner university during their second year.

Students who came with planning backgrounds generally felt liberated by design. For them, all knowledge domains came into play: science, art, and value.⁷ Students with planning backgrounds learned how to draw; despite the hard work it was to develop designs that other students did with greater ease. Students with Landscape Architecture backgrounds tuned in quickly to changes in the urban environment. They more frequently came with knowledge about landform, geology, and hydrology. During the international workshops in places, individual students with backgrounds in landscape architecture gave strength to the discussion among team members. Regardless of where we worked, China, Vietnam, France, or the Bay Area: “You can’t just fill a wetland, its biodiversity has great value, or you can’t just cap a polluted site, the groundwater remains contaminated.” Regardless of background, students learned to solve issues through collaboration. Divergent ideas and tolerance helped solve wicked problems (Sachs, 2018, p. 1300).⁸ Design is never apolitical. It was important for the instructor to emphasize that professional realities in future consulting firms, or in city government, might ignore the need for debate. An opinion might prevail, but what professionals hold to be true will suit everyone. But at the university, students absolutely need to discuss divergent ideas about what is good design.

All students learned the difficult lesson about anticipating concerns that might be voiced by those who will live with their designs once built. There will always be opponents and proponents to design interventions. Urban design proposals go through a public process, especially if land use changes or changes to the intensity of use are proposed. Such proposals are evaluated by elected or appointed officials who pass judgment about what should be allowed and what cannot be justified in the interest of the common good, a process that is hardly ever neutral or free of ideologies. It might be fair to say that a measure of success would be to say the educational program’s intention was to reduce adherence to dogma, as much as that is possible in a society so divisive in its allegiances to ideologies. The more isms, the greater the schisms.⁹

Judgements university administrators made about the program were important for continued support. Faculty and administrators are subject to much pressure to operate with efficiency and fiduciary responsibility. After twenty years of the urban design program’s existence, most founding members, one by one, reached retirement age. Nearly all founding members, one after the other, had served as department chairs in one or the other three home departments of the college. This allowed them to remind fellow chairs in the college to join in the resolve to support the interdisciplinary urban design program. Four different deans served their terms as hosts of a program that was not under their direct supervision, but under the supervision of a dean responsible for all graduate programs university-wide. However, the administrative complexity and rising financial constraints cannot be cited as the only reasons for retreat to distinct professional silos. But retreats need to be understood in a larger context. Not only at Berkeley, but members of the planning faculty retreated away from physical planning and from implementing policy about city form through the regulatory framework. Landscape architecture faculty also retreated out of fear that other design disciplines would take away what is unique to their qualifications, especially their knowledge of natural processes and how such processes act on city form. Very decisively, natural processes act on cities at an accelerated rate, at a greater magnitude of change, and not for more favorable human conditions. Retreat is symptomatic of society’s escape from the complexity of change. With the rise of autocracy in government and the irrational disregard for science, the problems for cities and metropolitan regions call for collaboration in design and research. It was the complexity of solving wicked problems that led to collaboration between professions to intelligently conceive the future (Sachs, 2018, p. 134). Urban design education has evolved. The New Urbanism movement initiated urban design programs. Collaborations with business schools emerged in the starting urban design and real estate programs. Urban design, jointly with

⁷ Stephen Jay Gould (1999), the Zoologist referred to the three knowledge domains in *Rocks of the Ages, Science and Religion in the Fullness of Life* (Ballantine Books: New York)

⁸ Avigail Sachs explained the wicked problem metaphor and traced the term to a publication (1973) and teaching at Berkeley by Mel Webber and Horst Rittel.

⁹ Goldwag, Arthur (2007) cites Huston Smith “All isms end up in schisms.”

geography, resulted in urban morphology programs. While change is inevitable, emphasis on pluralistic design remains unchanged. Urban design remains a social art.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

Ethics Committee Approval

Ethics committee permission is not required.

Resume

The author received degrees in architecture and urban design from the Technical University, Karlsruhe in Germany (1972) and the University of California, Los Angeles (1975). He joined the College of Environmental Design at the University of California, Berkeley in 1976, where he served as director of the Environmental Simulation Laboratory (IURD) from 1982 to 2017. His professional urban design practice includes work on the downtown plan for the City of San Francisco, the City of Toronto and cities in the Pearl River Delta, Guangdong Province, China. He is a faculty member in the Departments of City and Regional Planning, Architecture, Landscape Architecture and Environmental Planning. He served as Chair of Landscape Architecture and Co-Chair of the Master of Urban Design Program. During a sequence of sabbaticals, he was invited as an endowed professor to the Royal Academy of Art in Copenhagen, Tokyo University, the Polytechnic University in Milan, the Institute of Technology at Delft, and the South China University of Technology. He is currently a Professor of the Graduate School, UC Berkeley.
