Margins Reinvigorating the Core: Toward Fluid, Integrated Curricular Models in Architectural Education

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INTRODUCTION

While each generation of architects and architectural educators characterize the profession and discipline as in 'crisis,' there is widespread agreement that the challenges we are experiencing currently – economic, environmental and otherwise - are unprecedented and monumental. How do we respond to these circumstances in architectural education? What are some alternative directions for the academy relative to transformations in the profession and society at large? How do we acknowledge changes in the way architects work and the nature of the work to be done? In this paper I discuss briefly some contemporary concerns impacting the profession, and then describe three curricular initiatives my school has undertaken in the past two years that are intended in their modest way to shift curricular emphases in order to engage students in these challenges directly. I conclude by endorsing fluid, integrated curricular networks realized in part through reconsideration and redistribution of core content.

AN ELIXIR OF CHALLENGES FACING OUR PROFESSION AND SOCIETY

I would first like to comment on some larger circumstances affecting architectural practice today. While one might emphasize social transformations underway (the rise of global culture, an increasingly diverse household makeup, a recalibration of the American dream), or perhaps sweeping technological developments impacting the way we work and live, or still numerous other trends, for the purposes of this paper, I would like to focus on two interrelated issues of ecological and economic health:

Environmental Degradation

Global warming, habitat fragmentation and mass extinction, water and air pollution, landfills exceeding capacity and other grave ecological concerns haunt contemporary experience and generate anxiety about our future. USGBC and LEED, Ed Mazria's 2030 Imperative, The Living Building Challenge, the EcoDistrict project and other emerging institutions and initiatives highlight these issues and the commitment of the profession to address them by transitioning to more environmentally responsive building and development practices. The trend toward increased urbanization exacerbates these problems, given that cities function as "highly ordered dissipative structures," entropic entities within global, complex biophysical processes.[1] With this in mind, we see a call to link urban expansion and increased density with improved natural systems function in our cities, a demand that adds to the opportunities and responsibilities facing architects.

Economic Uncertainty

In contemporary capitalist society, all conditions of transformation are tallied as forces of an economic trajectory. The current trajectory as we all are aware is a leveling or even one of continued deceleration. In an informal pole, perhaps one quarter of the architects and architectural educators I have spoken with in the last year argue that the current recession, its magnitude notwithstanding, is an expected event, a "correction" within the cyclical nature of the market. A large majority believes history is of little predictive value in comprehending the new geography of the 21st century economy.

They insist that the kinds of projects architects will assume will be of a different nature, that instead of 'conventional' mixed-use (re)development projects, for example, the focus will be adaptive reuse, city repair, "bundled delivery services," and green urban infrastructure. Teddy Cruz, the San Diego based architect and theorist, sees a shift from 'megaprojects' – and accompanying 'marginalization' projects - to 'microurbanism' as more typical of the future manner of private development. It is fascinating to speculate as to the potential interplay of 'microurbanisms' (private) and urban infrastructure (public or public/private) in the remaking of our cities.

If we acknowledge the current that represents the summation these and other developments, we have some capacity as architects and architectural educators to channel it via adjustments to our own ways of working and teaching. Reinvigoration of the academy and the profession can result. On the other hand, when we resist momentum, we subject ourselves to deformation and continued marginalization. The architectural way of life cannot be non-negotiable, and architectural curricula must transition to acknowledge these concerns more aggressively.

THREE SAMPLE INITIATIVES

The Ecological Design Graduate Certificate (EDC), the Sustainable Cities Initiative (SCI), and the proposal for a Masters Degree in Sustainable Systems Design and Management (SSDM) serve as examples of emerging curriculum-related programs at my school that attempt to empower design students to address topical issues more comprehensively than what is achievable in a more traditional architectural curriculum.

Ecological Design Certificate Program

The certificate in Ecological Design, in effect the graduate equivalent to an undergraduate minor, challenges participating students to develop an in-depth understanding of relationships between natural systems processes, urban development and form, and issues of cultural sustainability and social equity. Students acquire a theoretical and pragmatic basis to carry these understandings into practice, in part through exposure to how allied design and planning disciplines and the natural and social sciences approach these issues.

The certificate is intended to complement a master's degree and is customizable depending on a student's articulated interests. Ecological design is thus broadly construed. As one example of a path of inquiry, a master of architecture candidate with a B.S. in chemistry has the prerequisites to take advanced seminars in "green chemistry" and "smart materials" in the Chemistry Department. They can then apply this knowledge in developing radically efficient, nontoxic façade assemblies in "building enclosures" and other technology courses in architecture. The program is new (two years old), and we continue to map courses throughout the university that design students can take that will augment their master's experience. Our intention over the next several years is to develop templates of courses of study so as to formalize and make available to others the rewarding educational paths of previous certificate participants.

Student enrollment exceeds original estimates by a factor of three. I gather testimonials of students who have completed the certificate and have successfully gained employment with architectural firms in a highly competitive market, in large measure because of their participation in the program (so they say). In addition, prospective students seek increasingly to couple more traditional architectural study with a focus on ecologically sensitive design approaches.

Sustainable Cities Initiative

SCI represents a multidisciplinary teaching, research, and policy effort to comprehensively address a range of issues related to urban environmental, economic and social health, including but not limited to: urban design, housing, stormwater management, non-motorized transit and ecological habitat. An entire suite of classes over an academic year – courses in architecture as well as planning, business, landscape architecture, law and geography – focus on specific problems a partner city is experiencing, with a goal to assess the landscape comprehensively and to develop an integrated vision for the city within which specific projects can be situated. The program attempts to balance pragmatic concerns with opportunities for students to generate visionary proposals relative to the sites and constituencies they work with. Perhaps most critically, by linking course content across disciplines, SCI provides students a comprehensive un-

derstanding of the sequencing and politics of urban development; for example an architecture student can track a district scale redevelopment proposal from analysis to conceptual design to the identification of policy impediments that thwart realization of such a proposal, and finally to business plans along with recommendations for revising policies so that implementation can be achieved.

Sustainable Systems Design and Management

While many institutions offer Master of Architecture (MArch) and Masters of Business Administration (MBA) programs jointly, the idea behind this new proposal, still under development, is a more seamless integration of architectural design and business management combined with urban ecological science. This problem centric vs. discipline centric vision emphasizes the design and implementation of more ecologically functional systems, ones that contribute to urban social, economic and environmental health. Cities across the country are engaged in a dramatic reconsideration of the nature, scale, efficiency and visibility of infrastructure ('green' stormwater management and district scale energy production are examples of urban systems of growing significance). By anticipating the transformations that are taking place in business, architectural practice and the priorities of our cities, and by preparing students with needed design, entrepreneurial and systems thinking skills, such a Master's Program would enable students to assume leadership roles in the 21st century economy.

One way of summarizing these efforts would be to say that the EDC attempts to innovate by adding curricular opportunities to what exists currently within the school, SCI offers a rich and integrated learning experience through the creation of more explicit linkages within an existing course structure, and SSDM anticipates a more radical interdisciplinary curricular model. While these initiatives certainly do not respond evenly or comprehensively to the challenges set forth at the beginning of this paper, they do serve as possibilities for how we might address critical issues while making explicit through their growth and growing pains what is holding us back. These and other new programs build from and advance the values of my school; there are clearly many other kinds of programs that would meet contemporary challenges while reflecting a given school's strengths, traditions and current dispositions.

STRATEGIES IN ARCHITECTURAL EDUCATION

Keeping in mind the pace, magnitude and volatility of contextual transformation, what strategies that underpin the initiatives discussed previously might impact architectural education more broadly? Here I would like to outline four 'metastrategies,' recognizing that, given the limited scope of this paper, I omit many others that warrant consideration.

An Integrated Curriculum

In acknowledgement of the fluidity of movement of information across disciplinary boundaries, and recognizing students' greater retention of knowledge through sustained application, we might work toward greater curricular integration in programs of architecture. This could involve more effective alignments between studio explorations and content in subject area courses (within and beyond architecture). We might also strengthen highly collaborative and interdisciplinary opportunities within the design studio in order to better prepare our graduates to work more effectively with colleagues in allied professions.

The notion of an integrated architectural curriculum is hardly novel, and it is certainly the case that synthetic manners of thinking and working have long been considered hallmarks of successful architectural practice. Integration is offered as one of the key 'renewals' in the framework recommended by Boyer and Mitgang in their 1996 'Carnegie Foundation Building Community Report' (known more commonly as the Boyer Report):

> "The architectural curriculum at all programs should be better connected. A connected curriculum would encourage the integration, application, and discovery of knowledge within and outside the architectural discipline, while effectively making connections between architectural knowledge and the changing needs of the profession, clients, communities, and society as a whole."[2]

Fourteen years after the publication of the Boyer Report, we must 'renew' this emphasis once again, accelerate our efforts toward curricular integration, and acknowledge that the issues that distinguish our current situation from previous eras are deeply structural. These emerging concerns call for new

kinds of partnerships and in many respects wholesale redistribution of emphasis and intensity in the different phases of design. Highly innovative architectural practices such as Mithun in Seattle and Behnisch and Partner in Stuttgart, to name a few, have embraced an integrated design model where a robust team develops a shared yet malleable vision for an architectural undertaking in the schematic phases of design, so as to improve communication and alleviate conflicts and inconsistencies in later phases (when changes are cumbersome and costly). Such teams include standard partners such as engineers and landscape architects in addition to biologists, hydrologists, sociologists, green building consultants and others. In this way, highly consequential formative design moves anticipate a more comprehensive set of conditions. Given the conceptual focus of so much studio focused curricula, architectural education is poised uniquely to explore and test these emerging models of intensive, schematic integrated practice.

Emerging Modes of Representation and Communication

Critically integrated, highly collaborative manners of working invite new modes of representation and communication. We must assume graphic, narrative and information conveying strategies that address the experiential, tectonic and behavioral dimensions of architecture. BIM and related advancements expand our capacities greatly in these areas, and yet we must not assume the conviction that any one set of tools is sufficiently comprehensive, and instead continually greet that which exceeds our current protocols. The late Guenter Behnisch reminds us that in the creation of works of architecture of enduring meaning, we must engage design processes where the unforeseen and generally underrepresented have the opportunity to emerge, so as to ignite our creativity and to enrich us ethically and otherwise. This suggests the importance of encouraging and enabling students to work in multiple modes – digital, analog, 3D, soft, hard, written and spoken – no easy task given the proliferation of tools available currently.

A Flexible Curriculum

And yet it is impossible that all students graduate with comprehensive facility with all the conditions and tools confronting us, and we must consider boldly how to instill basic competencies while allowing students to pursue their passions. I am calling for architectural curriculum that is more flexible. Once again, the authors of the Boyer Report recognized this imperative fourteen years ago: while "flexibility is the necessary precondition for discovering the connectedness of knowledge," in surveying architecture programs across the country, the authors found that in a typical program "the curriculum is jam-packed to the breaking point."[3] A few years later, at a time of vastly greater prosperity for architects than today, Julio Bermudez, in his paper "The Future in Architectural Education," argued, "The type of profound change our civilization is undergoing suggests the need for high levels of contextual awareness, questioning, and flexible adaptability."[4]

Boyer and Mitgang see a correspondence between flexibility and integration: "Thematic integration of subjects and the 'bridging' of lecture and design subjects are among the keys to flexibility."[5] With this in mind, one curricular goal may be to meet NAAB accreditation criteria through a more compact delivery (fewer courses) so as to open up customized paths of design and building science inquiry. One example of this that colleagues at my school have discussed would be to align technology topics such as structures and environmental control systems in a required, introductory 'building physics' course that would fulfill numerous NAAB 'Realm B' criteria. This would reduce the number of required technology courses, free up faculty to teach specialized topics they wish to explore, and enable students inclined toward building science to take more advanced level courses and develop a high level of proficiency in this area. This is but one example of a more 'free market' curriculum, where students are empowered to identify emphases and develop skills that align with a set of convictions they are asked to articulate relative to emerging societal trends and market opportunities.

Futuring as an Explicit Dimension to Architectural Education

A fourth and final 'metastrategy' concerns the ability to entertain uncertainty and multiple futures as an explicit dimension to architectural education. Of course the architect, by her very actions, offers an attitude and establishes a framework for what the future will look like. And increasingly we accept the grave responsibility we bear with regard to future

generations in terms of the material assemblies, energy systems and spatial configurations we plan and realize, and the likely expense and effort involved in making future modifications in response to changing needs. While we cannot predict the future, we can imagine a multiplicity of scenarios that may lead us to more consciously seek resilient, or adaptable, or demountable, or more enduring, or ethereal architectures, and perhaps hybrids of these.

Discussions with colleagues at my school and around the country indicate deep awareness of the importance of design integration and collaboration, of the impact of new modes of working and representing for architectural practice, of the value of flexible and diverse course offerings, and the need to be steadfast in envisioning an uncertain future. And yet we seem hamstrung in acting aggressively and comprehensively as evidenced by the state of much of our curricula. The crux of the problem pertains in large measure to the uncertainty of how to reconcile the increasing amount of information and complexity in our own discipline with the need to link more effectively with other disciplines and professionals. Put in other terms, we have the opportunity and responsibility to offer to students a more 'generalist' education within the discipline of architecture at the same time we are wise to encourage the development of 'specialist' expertise that is a function of strategic interdisciplinary study.

We can argue over the terms and the amount of attention we ought to pay to each, but it would be difficult to imagine a robust, professional architectural program without student exposure to topics such as architectural history, theory, spatial ordering systems, construction, structures, environmental control systems, traditional and digital media, human factors in design, site analysis, professional practice and ethics, etc. And now it seems downright irresponsible if we do not offer students greater exposure to sustainable building technologies, innovative models for business management and entrepreneurship in a troubled economy, means of engaging dynamic ecological systems and processes in architectural design, exposure to emerging demographic trends, etc. The initiatives discussed previously, while they have yet to dramatically after our mainstream curriculum, do instigate a more critical conversation of the purpose and mode of delivery of architectural education in this world of anxiety and overload.

A FLUID VISION FOR ARCHITECTURAL EDUCATION IN THE 21ST CENTURY

I receive a tremendous range of responses when I query architectural educators about what they believe represents the core of architectural education and practice. This would seem to confirm Varela, Thompson and Rosch's conviction that we are "building and dwelling in worlds without ground."[6] The initiatives I have discussed in this paper, by no means encompassing yet highly tactical, attempt to bridge gaps within such realms of openness and uncertainty. Their continued success and growth will depend in part on a reduced core curricula in combination with the development of fluid and network-like topical clusters that prompt students to cultivate their inclinations as to where the world is heading, as they engage in their own design futuring.

Again, this call for flexibility and diversity is hardly novel. Boyer and Mitgang cite the "Princeton Report," produced by the AIA in 1967 and formally known as the "Study of Education for Environmental Design," in describing the need for bridge building:

> "To build those bridges, the report called for a flexible architectural curriculum, a wide range of teaching methods, and diverse architecture programs. Rather than proposing a 'core curriculum' for all schools, the report suggested an intricate 'modular, jointed framework for environmental design education' aimed at allowing students to tailor their studies to prepare them for more than nine hundred possible design-related careers."[7]

In the past forty-three years we have witnessed a further proliferation of possibilities for architectural and architecture related design practice. In the face of this, we are challenged to not only develop curricular opportunities that support diverse and yet interrelated interests; we must also ensure effective communication of innovation between topical areas both within the discipline of architecture and between architecture and other pursuits.

Let us acknowledge the impossibility of sustained exposure of any one student to all domains of contemporary architectural practice, and instead foster sustained manners of working, thinking, strategizing and collaborating that result in adeptness in negotiating our challenging terrain. I think of the potential role of the architect in light of the French philosopher Michel Serres' call for the sage-like "Instructed Third, knowledge's troubadour, who, among other capabili-

ties serves as solitary navigator of the Northwest Passage, those waters where scientific knowledge communicates, in rare and delicate ways, with the humanities." (8) Borrowing further from the subtleties of French thought and language, I consider the wondrous potential of the architect equipped with *prevoyant*; "The power of a prepared mind to act upon chance events in a world of deep uncertainty," of "making sound judgments in world of danger." (9) We must continue to build programs of architecture that link boldness of action with thoughtful reflection, attentiveness to evolving conditions with the modes and skills necessary to meet them.

ENDNOTES

1 See for example: William Rees and Mathis Wackernagel, "Urban Ecological Footprints: Why Cities Cannot be Sustainable – and Why They are Key to Sustainability," in *Environmental Impact Assessment Review* 16 (1996): 223-248; also see: James Evans, "Wildlife Corridors: An Urban Political Ecology," in *Local Environment*, Volume 12, No. 2, April (2007): 129-152, p. 132.

2 Ernst L. Boyer and Lee D. Mitgang, *Building Community: A New Future for Architecture Education and Practice* (Princeton, NJ: The Carnegie Foundation for the Advancement of Learning, 1996) p. 27.

3 Boyer and Mitgang, p. 82.

4 Julio Bermudez, "The Future in Architectural Education," *Proceedings of the 87th Association for Collegiate Schools of Architecture Annual Meeting*, Minneapolis, MN, 1999, p 321.

5 Ibid., p. 84.

6 See: Francisco J. Varela, Evan Thompson and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: The MIT Press, 1991), p. 254.

7 Boyer and Mitgang, p. 22

8 Michel Serres, *The Natural Contract*, Elizabeth MaCarthur and William Paulson, transl. (Ann Arbor, MI: University of Michigan Press, 1995; originally published as Le Contract Natural, 1992), p. 94.

9 David Hackett Fischer, *Champlain's Dream: The European Founding of North America* (New York: Simon and Schuster, 2008), pp. 142, 530.