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Molecules, Money and Design
The Question of Sustainability's Role in Architectural Academe

Mark Jarzombek

The connection of capitalism to architecture is so obvious that one often wonders why it remains so discreetly undiscovered. Is it because this connection is still wrapped in professional discourses that pretend that money is only the means to an end? Or is it because we lack the critical discourse on how to properly document and historicize its diaphanous realities? Whatever the reason, advanced capitalism has reduced architectural decision-making more and more to the level of gloss. To lament this as a loss and to evoke some self-righteous "phenomenological" alternatives would be to ignore the fact of capital in favor of the seductions of an implausible authenticity. There is something in-between, but what? In recent years, there has been a growing interest in the project of Sustainability as a site where ethical commitment, architectural practice, capitalism, and good design could come together. But before one can assess the legitimacy of the new relationship of architecture to sustainability, one must study more critically some of its implications, especially for the architectural academy.

The basic premise of sustainability is simple enough. Coming from the perspective of Natural Sciences, it holds that there is only so much oxygen, only so much land, and only so much water to go around; since these natural resources exist in equilibrium, civilization can only change that equilibrium for the worse. But whereas the actions of man have in the past been relatively minor in effecting change, they are now on the verge of creating an unalterable turn for the worse. The problem is measurable on a global scale, and it is precisely because it is global that it is, finally, measurable.

The main culprit in all this is the mismanagement of agricultural land and the rapid growth of industry and cities. But unlike New Urbanism, which emphasizes design solutions and community-oriented politics, sustainability emphasizes the primacy of the physical environment, an environment that it defines as a world-of-chemicals-in-dynamic-interaction. This "environment," seen as something that can be studied at a molecular level, can — according to the principles of sustainability — be repaired at the molecular level. Whether it is about CO₂ levels, the ozone hole, or the developments in global warming, we are now a society conscious of these factual measurements and their possible implications.

Sustainability thus presents nature as a place that is chemically constructed and therefore humanly malleable. And this means that sustainability must work with capitalism and government, for just as much as these institutions are responsible for the problem, so they alone possess the resources nec-
There are millions of reasons for you to take advantage of Armstrong's Ceiling Reclamation and Recycling Program, here are two.

1 The President's Council on Sustainable Development (PCSD), for example, was established by President Clinton in June of 1993 to advise him on sustainable development and to develop “bold, new approaches to achieve our economic, environmental, and equity goals.” According to its mission statement, it aims to suggest “the next steps in building the new environmental management system for the 21st century.” Environmental issues will be coordinated with “policies and approaches that promote sustainable communities” while simultaneously aiming for “sustainable development in the flow of financial capital from developed to less developed countries.”

2 See the web page: http://www.sustainable.doe.gov/index.html

Sustainability's mandate for change is thus not based on our ability to empathize with the oppressed victims of capitalism, nor does it aspire to some sort of romantically inspired “return to nature.” Instead, Sustainability moves from the reasoned understanding of the unalterable course of inanimate atoms to a molecular-political geography that intends to reform the world of the Western industrial elite from the inside out. As can be expected, these operations are not always as straightforward as changing the chemicals in hairspray. Established patterns of land use and industry are difficult to alter, and this means that as Sustainability becomes ever more involved in the politics-of-change, it becomes saturated with the problem of hypocrisy. The Center of Excellence in Sustainable Development, a Project of the U.S. Department of Energy, for example, is filled with statements that sound great but mean nothing. “Minnesotans,” we are told, “will act to protect and enhance their environment.” Even where Sustainability has shown itself successful, it still often holds to the rhetoric of some grand compromise. The Sustainability program initiated in Northampton County, Virginia claims, for example, that it will “develop the heritage tourism industry while protecting natural and cultural assets,” “develop seafood and aquaculture industries while protecting water quality,” and “develop new industries... while protecting sense of place, quality of life, and the groundwater.” It is precisely this image of political harmony as an extension of molecular harmony that makes the political action of Sustainability so successful as both practice and rhetoric.

Architecture, often the villain in the world view of Sustainability, has begun over the last decade to find a greater and greater role in this type of argument. Apart from the architecture of eco-management, there are two different strands of accommodation: one comes from the direction of domestic architecture, the other from the direction of corporate. In regards to the former, there is a growing legion of architects who specialize in sustainable domestic design. Though some dig into the sides of hills, using rubber tires, mud and straw, there is a large group of designers who are satisfied with traditional materials and spatial conceptions. Their design-build projects, “green” housing projects, “self-sufficient” houses, “solar” houses, and “Eco villages” can be found in many parts of the world.

Connections between Sustainability and architecture have also been forged in the world of advanced capital. There, however, Sustainability is mainly discussed as a question of how to develop “environmentally responsible,” thermal-control technologies. Increasingly aware of the impact that large buildings have on the environment — but also on building cost and public relations — corporations have begun to think along the lines of their larger “glob-
al” responsibility (see ill. 2, 3 and 4). The result has been the emergence of a billion-dollar industry in green-equipment and green-technology. But, just as there has been much advancement, there has also been a lot of hypocrisy. Is it real change or business-as-usual when thermal cost-efficiency is re-defined as “Sustainability?”

High-cost, heavily researched technical architecture on the one hand, and low-cost populist architecture on the other hand, have had an important impact on professional practice in their various ways. The fact is, however, that both are remote from the traditional concerns of the architectural studio. Formulating an architecture-of-Sustainability that is more compatible with academe has been slow in coming; William McDonough (UVa), Andrew Scott (MIT) and Robert Koezer (Ball State) are among the people who keep the question of design in the forefront. But perhaps the best example of an architecture of Sustainability that is compatible with the studio environment can be found in the work of Thomas Herzog. Conscious of the impact his buildings make on the environment, Herzog not only tries to use conventional methods of environmental design (e.g. high spaces to reduce air-conditioning cost), but also works with manufacturers to design new and sophisticated types of glass. In regards to the former strategy, Herzog represents all the attributes of a smart designer. After all, high ceilings and nuanced use of sunlight make just as much sense now as they have for the last thousand years. They have less to do with sustainability than with the usual issues of design. As Herzog himself admits, proportion, and even beauty, must be taken into consideration.

Herzog presents himself, however, less as a designer than as a technical innovator. In fact, the monograph that he published on his work glorifies the technical proficiency of his office, in paragraph after paragraph he deals with his solutions to heating, ventilation, and structure. Like the commercials for 3M Corporation, he seems to claim, for example, that he didn’t invent the glass facade, he “made it better.” In recent years, universities interested in promoting connections between design, technology, and sustainability have, with a technical emphasis similar to Herzog’s mandate, offered courses on such topics as wind-flow, construction management, waste management, solar heating, energy-saving lighting systems, and even entrepreneurship.

But this is only one part of the equation; the ambiguity of Sustainability’s political correctness is slowly beginning to exert its own influence on the education. The Charter for Socially Responsible Schools of Architecture, adopted at the 1996 Habitat II conference in Istanbul, for example, demands a fundamental refashioning of architectural education. Schools of architecture are supposed to train students “for local, national and international political action.” What started as a need for technical sophistication (tinged by grassroots activism) is here ending up as a possible utopian revision of academe. Sustainability thus implies a grand narrative, the likes of which have not been seen since the days of the International Style.


4 For a survey of Sustainability in planned curriculum development in schools of architecture, see the web page: http://www.sacd.kent.edu/Architronic/v4n3/v4n3_survey.html

According to the “Charter for Socially Responsible Schools for Architecture,” presented in the previous web page, schools of architecture, among other things:

should promote amongst the teaching staff, the students and the public sustainable lifestyles and solidarity with deprived people. These should be regarded as both professional and individual responsibilities. This will also involve a redefinition of professional responsibility such that the primary duty is towards building users and their empowerment.

should develop their students’ skills to orient the profession, the local community, commissioning clients and building users towards ecologically sound, socially just and democratic processes and solutions. This involves training for local, national and international political action.

should encourage interdisciplinary and collaborative education and research targeted on responsible architecture, design and planning. They should seek to overcome interdisciplinary rivalries and competitive instincts and encourage cooperation between disciplines and departments. Such cooperation should be extended to national and international networks of research and design projects.

should give a high priority to developing the theoretical frameworks needed to understand the complex links between these issues, including the role of international capital. They should help in filling the gaps in literature available to students, practitioners and decision-makers, and, at the same time, make such knowledge available to the general public through didactic material and the media.

Though all these ambitions may be good, this mandate does not exhibit any awareness of the political issues that are involved. Is this because they are afraid of politics, or because they assume that political correctness will win the day?
These few comments are hopefully sufficient to outline the fact that Sustainability, as it impacts Western architecture, has set up at least three different operative political environments: (1) that of “green architecture” which is an extension of grass roots politics; (2) that of the corporate-technical, which is an extension and reform of the political economy of capital; and (3) that of a middle range architectural practice which is now beginning to include in its purview a critique, and revision, of academe. The last is the least explored and the least developed, with most of the current discussion being generated by technology advocates. But if Sustainability is to be more than that, if it is to be an actual paradigm shift in our geo-political consciousness, then it is time that we ask some real questions about what Sustainability in academe will look like. What will be the consequences if the forces of technology and popular culture unite in redefining the architectural academe? To help formulate a more critical position toward the dangers of this possible return of grand narratives, I have broken the topic into the following categories:

1. The Politics of History

There is a large debate about Sustainability in high school and college education. This fact means that as Sustainability inevitably — given the amount of pressure coming from government — reaches schools of architecture, the history textbooks which are now being used, and which usually emphasize formal-contextual design issues, will have to be dropped from the curriculum. What will replace them: a history of technology written by advocates of technology still beholden to some naive evolutionary model of “progress”? Should we discuss only those buildings that have been designed “responsibly,” only those which have been proven to have a positive impact on the natural environment? Even if advances were made in the history-of-technology, would not the whole endeavor require that the history-of-architecture be suppressed behind an even more problematic history, namely the history-of-our-global-survival? Should ethical issues be put on par with design issues in writing history? Should Herzog be privileged ahead of Gehry? One faces the daunting question: Who would be authorized to make such decisions?

2. The Politics of Natural Science

Sustainability has become a central discourse with the help of Natural Sciences, and this discipline claims to be able to measure the consequences of our actions at a global level. This means that Sustainability can only determine progress through the processes of its own “instrument readings.” Consequently, Sustainability requires that architecture measure and monitor itself in order to “prove” that it works. Indeed, several of Herzog’s buildings have been put to such tests. But is it right to measure a building’s impact on the environment by the amount of money its owner saves on electrical bills? Even if a building is cost effective in one respect, there are also other important concerns. If cost-effectiveness allows one to build a house farther out from the city center, does that not mean, in turn, that one will need more gas to get to
work? Therefore, the nature of cost-effectiveness and its implied "profit" remains a question; from a design perspective, a cost-efficient building might as well be an illusion. Another concern is what happens when the architectural space is designed in order to be measurable. Herzog's space already seem to fall into this category. In fact, in the guesthouse for a school in Windberg (built between 1987 and 1991), Herzog provided a panel in the lobby that gives the visitor precise feedback on how the building is performing. It is literally a machine for living in.

3. Politics of Culture

The rationalist tradition — the same rationalist tradition that in its earlier, internationalist phase was not "sustainable" — is, in the work of Herzog, now in a mode of self-purification. In other words, Herzog's architecture salvages the most austere form of modernism for technological revision without critically accounting for the legacy of that form of modernism. Strictly regimented, Herzog's buildings offer little alternative to the spartan Prussian tradition of German classicism (see ill. 5). Admittedly, rationalist architecture is a tradition with a lot of pride, but also one with little tolerance for those who do not fit into its system. One has to question what happens when energy-efficiency is raised to the level of a cultural paradigm to the exclusion of other factors.

4. Politics of Gender

Herzog's building are organized around the difference between major and minor spaces. There are work spaces and preparation space, living spaces and "service spaces." These distinctions fail to acknowledge the problematic relationship of technology to both culture and gender. One need only recall the work of Herzberger to understand what a truly innovative workspace might be.

Feminists would also see in Herzog's space little evidence of a true alternative. In fact, for eco-feminists, the problem of ethics and social practice is not solved by such an insistence on technology. On the contrary, it is only made worse. Admittedly, eco-feminism may not provide the profession with an exciting vision of architectural space, but Herzog's spaces are not particularly exciting, either. My point has to do with the principle: if ethics are now supposed to be an important component of architectural education, we must expand the discussion to take into consideration the question of gender. The question is not how to design for women, or how to make more efficient kitchens, but how to make women an equal part of the professional team. How is this to be achieved in a credible way when Natural Sciences and technology industries in general are still male-dominated? If architecture moves in the direction of Natural Sciences, all the advances that have been made in the past decades will be eradicated unless architects take vigorous action.
5. The Politics of Capital

The problems of capitalism may seem insignificant from the perspective of a profession that is trying to find legitimacy for itself, but they are not insignificant from the perspective of academe. Architectural academe, especially in the United States, has historically been remote from the capitalist world. It has traditionally emphasized the primacy of design over cost. If an efficiency paradigm changes this, are we going to require courses in business innovation? And if so, what courses will have to be given up in the curriculum to accommodate these interests? The synergy between architecture and capital, once introduced into the system of academe, will thus change the teaching of design in important ways. Disguised by its ethical mandate, Sustainability will force architecture toward a stronger connection to both government and big business.

6. Individualistic Politics versus Group Epistemological Politics

Sustainability will exert a shift on academe away from individualistic practices and toward group-oriented epistemologies (see illus. 6). Architects will have to learn how governmental and corporate agencies work, how research labs are organized and how to channel their design contribution into these ready-made systems. Studios will promote group projects instead of individual creativity. Reviews will suppress their emphasis on spatial ingenuity to emphasize spaces that are compatible with state-of-the-art, computer-aided analytical programs that can prove a design's environmental viability.

III. 6. This diagram shows the shift that Sustainability will exert on the architectural academe. Though subtle, the implications are great, particularly because of the increased emphasis on group epistemological practices, practices traditionally not allowed to play a determining role in pedagogical philosophies.
6. The Politics of a Utopia in Disguise

The mission of history/theory in the past thirty years has been to historicize and critique modernism, and thus to implicitly warn us against the return of grand narratives. Sustainability, because it is constructed on the principle of a grand narrative, will therefore have to alter the role that history/theory has established for itself as a "critical" participant in architecture discourse. History/theory will either be jettisoned outright, or will have to be sidelined to make way for the growing needs of the sciences. If this happens, there will be a fundamental revision of the intellectual framework of architectural speculation. The new "interdisciplinarity" of architecture-with-science will create, for example, an anti-interdisciplinary polarization of architectural discourse along the antinomic lines of artistic freedom versus technological complicity. If there is a "loss" in all this, it is that this polarization allows little access to the traditional "middle ground" of technology. Since the logic of participation-in-technology will become equivalent with the logic of participation-in-capital, the middle of the road designers will be forced to use those off-the-shelf devices that are discarded from high-end technological research. But even the new technology-oriented history of architecture will ignore the reinterpretative innovations of off-the-shelf realities, since they cannot be folded into its ideology of history-of-progress.

Conclusion

Modernism effected a profound change in American architectural academe. By the 1960s there was hardly a school left that had not adopted its message. Is Sustainability going to have a comparably profound effect? Certainly not in the short term, but it doesn't take much to realize that pressure is being applied. Its operative history, in this case, is already visible. But will we, as a result of these pressures, see a separation of the technical aspects of architecture from its intellectual aspects? Will we see an escalation in the rhetoric between the champions of "real world" pragmatism and those of avant-gardism? Will we see the end of that vibrant history/theory discourse that has so invigorated the architectural thinking of the last thirty years? Probably. This means that many of us will have to make some gut-wrenching decisions about what is the function and purpose of academe.