An Argument for a Cultural Focus in Architectural Technology Pedagogy

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INTRODUCTION

While technology is one of the most rapidly changing and frequently discussed subjects in the academy today, its meaning in architectural education, in other than a functional sense, has gone largely unexamined. In some architecture programs an inordinate amount of coursework is spent teaching the principles and conventions of traditional technology often under the guise of enabling the student to pass the licensing exam. This is not, however, what a university education is for. Technological literacy is more than passing a standard exam. Technologies change so rapidly that what is current one year may be obsolete the next. Something *in addition to* an instrumental approach to technology is called for if students are to have a deeper understanding of the technoscientific world they will face as professionals in the coming decades.

How should architectural training be reformed so that students are better able to conceptualize the interrelatedness of technologies in the built environment? First of all, technology should be taught as multiple material, local, and global practices rather than only as formulas and applications. In other words, it should be dually focused on both a socio-cultural approach to technology as well as cover the basics of function as it relates to design. Secondly, the field of technoscience has been extensively researched by many scholars within the disciplines such as sociology, anthropology, philosophy, history, and political science. Mapping the concerns of architectural education onto this emerging field of technoscience study will undoubtedly yield exciting new paths for design exploration. This material can provide a starting point for investigating technology in the built environment from other than an instrumental perspective. I feel this will be one of architectural education's contributions to technology and innovation within the profession.

Several years ago, Kenneth Frampton in his book *Studies in Tectonic Culture* concludes that, due to the complexity of technological systems in the built environment, the architect will have to coordinate these systems with a new *cybernetic approach* to fully realize the interrelationships between them.[1] This, according to Frampton, will determine whether the profession will be able to reposition itself in the culturally diverse, global information age, or cease to exist at all. Talk of the "end of science" permeates popular culture; this is the idea that all the discoveries have been made and we are now simply inventing new applications for our ingenious tools and ideas. In the field of design, for example, the possibilities for discovering new webs of connectivity between humans and their environments, coordinated by the architect and his or her computer prosthesis, are endless.

Technology education should not be a mirror of practice but a diffracting lens, a speculative practice, whereby students understand the contextual nature of technology. This approach can also offer critical points of entry into architectural discussions of: social and cultural theory, environmental issues, and critical views on the history of the built environment. By looking at technoscience as both discourse and practice we move beyond the strict divisions and dichotomies that structured modernity such as : subjects and objects, natural and artificial, culture and nature, human and machine. William Mitchell states: "We make our tools and our tools make us: by taking up particular tools we accede to desires and we manifest intentions."[2] Technology is, at its core, cultural.

WHAT DOES THIS ALL MEAN FOR ARCHITECTURAL TECHNOLOGY PEDAGOGY?

One of the most interesting new fields of architectural technology to emerge in the last several decades is sustainability.[3] But what, exactly, is it? I believe that in order for sustainability to be a meaningful concept it needs to be broken down into its constitutive components. besides the technological know-how to design energy efficient buildings there is a second component to a sustainable environment. This component could be called "macro issues of the environment in design", such as policy, cultural and would social mechanisms for environmental change, and the role of architects and planners in propelling positive environmental change. Architecture students should be exposed to current theories and debates about the social as well as physical construction of the "natural" environment. This would be a course of study based on both theory and practice, and relying heavily of case studies and empirical evidence gathering. I feel that ethnography and other social and cultural-oriented research methodologies could be taught as part of such a course on the shaping of the built environment. A benefit of such studies would be the opportunity for the student to theorize from the ground up. From analyzing the empirical evidence, one could then begin to find the appropriate theories that best describe the structures and processes of the environmental changes that are happening in the community or neighborhood or urban fabric. These

theories would likely be a mix of various theories so that the data was properly represented in them. This opportunity to generate new hybrid theories from evidence is the basis of practical theory application in architecture.

I propose re-designing the current ECS course sequence to incorporate current socio-cultural ecological building practices, thus mainstreaming these practices rather than marginalizing them in a green-building or "culture" seminar. I believe that both industry standard ECS practices as well as my proposed "macro issues of the environment in design" should be taught as a seamless set of considerations for sustainability.

The "intelligent building" is another potentially cultural issue that should be introduced in the ECS sequence. In many ways this represents an altogether different trend in architectural technology, one that is more in tune with the digital revolution and the dawning information age. These buildings, like computers themselves are a black box technology- this is a metaphor meaning: input and output with little known about the in-between. Examples such SOM's Lucky Goldstar building in Korea, described as an "ultra-modern information system of the 21st century" and has a series of interstitial spaces designed for long-tern wiring flexibility, a bldg that will adapt quickly to changing technological needs The building is highly engineered and totally computer controlled to minimize operating cost and energy consumption. None of this is expressed in the form, but is instead hidden, in some ways like the post-war mechanical boxes of the modern era buildings.

While the efficiency of these kind of buildings is to be commended, questions should be raised regarding the level to which human choice and changes in human performativity (what people do) can impact and change their environment. Is this kind of black-boxing of technology inherently dictatorial and disempowewring? On the popular front, intelligent building systems are adding "smart" capabilities to your average suburban home. Again, what is user satisfaction with these systems and how have residents of these kinds of homes strategically altered the technology in ways its creators had never imagined? In other words what are the local inflections of the new global technologies?

Another example of a technologically-driven building type is seen in the multitude of manufactured office structures quickly assembled for the growth of the dot-com/IT industry. This is a major growth area in the building trade and one that architects should not ignore. I was on a panel about a year ago at the annual meeting of the Society for Philosophy and Technology held in San Jose, California. Bob Mugerauer, a philosopher (who is now the new Dean at the Univ. of Washington), was on the panel with me and we were presenting our work about architecture. He boldly declared the "end of architecture" in so many words. He based his proclamation on empirical evidence he had discovered while researching the building boom that accompanied Austin Texas' high tech/ IT industry growth.

These new "flexible buildings" or "flex space" are quickly assembled building shells with high open ceilings providing ample room for computer racks and easily accessible loading bays for heavy equipment to me moved in and out. The buildings cost one third that of typical strip mall office buildings cost to build and clients pay for no public space as they rent the entire bay(s) to do with as they please. Their longevity is due to the fact that they survive the swings in the IT market, in large part due to their flexibility.

Most would argue that these flexible buildings are not architecture. But could they become architecture if given the thought and care we give other more culturally acceptable building forms? Frank Gehry's Chiat/Day advertising office (1986) in Venice, California is an excellent early example of designed flexibility. In this project workers could actually re-shape their work spaces daily depending on their tasks and meetings. In this case flexibility went beyond simple economics to an empowering strategy for workers and a efficient use of space for the employer. This could not have been accomplished without architectural input and knowledge of the social workings of the technologies at hand in an advertising design firm. This trend of designed, flexible interior architecture takes a knowledgeable ethnographic understanding of digital office practices. For students to become successful practitioners in this new arena, they will need to understand the performative (i.e. socio-cultural, what people do) aspects of flexible space as well as how to physically construct it.

THEORETICAL UNDERPINNINGS OF THE ARGUMENT FOR A CULTURALLY FOCUSED TECHNOLOGY

The social and cultural nature of both digital culture, or cyber-culture, and of the impact of the computer on architectural practices are key issues that I believe we should be looking at in our study of technology. But first do we really have a clear conception of what we are talking about when we speak of "technology" today?

Often, it seems, technology is discussed as if it were a free-floating set of ideas and applications that are removed from the material, social, and cultural practices through which they were established.[3] Part of the problem is that we have unwittingly become victims of the Cartesian paradigm of use. In this view of technology, the human being is conceived of "as an instrumental actor standing astride the world of discrete external objects awaiting manipulation in accordance with the dictates of the subjective will."[4] I claim that technology is not a 'thing' to be manipulated but instead is part of who we are; an extension of what it means to be human. In the early twenty first century we are co-evolving as organism/machine hybrids and lack the descriptive metaphoric tools for understanding our technologically embedded and embodied selves.

Philosopher Merleau-Ponty claimed that humans are the "fabric into which all objects are woven." Using an example of a blind man he asserts that : "the blind man's stick has ceased to be an object for him, and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight."Following Merlou-Ponty, I allege that the division between human subjects and their objects which structures the Cartesian paradigm of use does not represent the activities of everyday life. While the arbitrary division of humans and technology may serve to efficiently transmit the mechanical workings of the latter it ignores the nuanced ways in which subjects and objects interact to shape contemporary life.

In order to bring the social, cultural and political aspects of our relationship to technology together, theorist Donna Haraway invents her version of a cyborg. He/she is a hybrid of organism and machine constructed to describe our actual and potential lives at the beginning of the 21st century. It is a metaphoric subject, an imaginary, meant to reconceptualize our world along the lines of Merlou-Ponty's blind man and his cane. She posits the cyborg as a material-semiotic actor, a composition that radically subverts the Cartesian paradigm of use. This boundary creature is a metaphor for recombinant and emancipatory uses of technology in locally meaningful ways; a co-evolution of humans and machines from both a local and global perspective. Haraway's cyborg is a deeply political actor, a renegade from corporatist conceptions of robotics and the like, committed to the realization of shared power and social justice.

Another way to understand the political dimensions of technology is via Foucault's notion of the inextricable relationship between power and knowledge. This lens provides a mechanism with which to analyze the socio-cultural context of technoscience within the built environment. Given that technology occupies a privileged place in our society and that technoscientific knowledge is highly regarded, questions the students might ask would be: How do certain technologies tend to concentrate or disperse power? Who is empowered and disempowered in the choice of certain technologies? What kinds of places are made possible by our technological choices in the built environment? And do these systems enhance personhood and citizenship in democratic societies?

According to Deleuze, Donna Haraway, Bruno Latour and other like-minded theorists, language and technology, or symbol and tool, are part of an intricate web of experience which constitute or "territorialize" human beings. [5] This parallels the ideas of other earlier theorists of space such as Henri Lefebvre who believed that social space is produced via a dialectic of practice and language; change in both is required as well as a shift in the relationship between the two for socio-spatial change. In our current cybercultural world, it is difficult to disentangle the user-cyborgs from their techno-networks. It is more productive instead to understand processes and effects (following Deleuze) in this hybrid real/virtual world- making endeavor. Thus the modern paradigm of people using tools to produce goods is no longer salient. We are part of the technological system as we make it ; our, bodies, technologies, and discourses are intricately woven into irreducible processes that are best articulated by examining certain sets of relationships rather than breaking everything down to their essential parts, rendering them acontextually.

With the advent of micro-technologies of the computer like the internet, software, and communications systems, social space is assumed to have been consumed by language effectively ignoring the structure of the technological or material assemblage. Thus the apparent freedom and shared power of this medium is illusory, as power that is monopolized or congealed within the machine is itself is forgotten —the black box paradigm. This is the insidious corporate teritorialization of cyberspace. In our changing configurations of social space we have gone from the modernist/enlightenment subject of the free individual acting upon the world with individual agency to a new configuration of tools, bodies, and language behaving as actor-networks sharing and assuming power and agency in hybrid ways.

I am concerned about the growing primacy of the technological and, specifically, how we might respond to that as architects. Technology in itself is not inherently authoritarian, but the sharing of power and responsibility must be carefully articulated when using these techno-devices toward space-making ends. If we are not vigilant in constantly looking for accumulations of power within the technologies we use, and in deconstructing the spaces and places we design towards distributive justice, who will be? This is particularly important when we, as architects, choose the technologically dominant space of the computer, to work out equitable and desirable material effects. Political theorist of technology Langdon Winner has argued that we ignore the politics of the artifacts that we use, mindlessly applying them without regards to their power effects. This non-critical approach to technological artifacts is a result of our tendency towards habitual use of tools. The normative technological social space that habit constructs occludes the workings of power and injustice, requiring new language and practices to understand new modes of working and designing. We need to ask "What is being encultured in new technologies, and what do new technologies enculture?

CONCLUSION

Architecture schools need to teach the social, cultural, and political nature of technology as it shapes and is shaped by the built environment. Students should be given the basic tools of analysis needed to assess technology in more than instrumental terms thus becoming more effective designers and citizens in the complex world in which we live. While function-oriented technology education can be creatively reinvented such as my idea including exemplary macro scale environmental design practices, the socio-cultural side of many technologies still remain unproblematized. Through completely dismantling the black box, beyond monovalent functional explanations, the student can begin to ask second and third order questions about technology and the places they are designing for human habitation. They can begin to see interconnections between architecture and a multitude of other disciplines and practices that were before occluded by blind assumptions shadowed in the black box.

I believe that schools should offer a courses in culturally focused technology, both theory and practice, which examine these and other related important questions, possibly exploring new research directions in architecture for the student as well as the teacher. This new way of looking at technology will go a long way towards helping us understand technoscience as constitutive of who we are. It will enable a new generation of designers to imagine projects in which humans and non-human elements form webs of interconnectivity towards establishing a more egalitarian and sustainable future.

NOTES

[1] Kenneth Frampton, *Studies in Tectonic Culture* (Cambridge, MA: MIT Press, 1995): 386.

[2] William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-photographic Era* (Cambridge, MA: MIT Press, 1992): 59.

[3] I owe this discussion of sustainable design and the examples to the many conversations I have had with Steven Moore. His article "Competing Dualisms in Sustainable Technology" fromthe 1998 ACSA Annual Meeting Proceedings as well as his book review essay on sustainable design, *Journal of Architectural Education* (May 200) was very helpful.

[4] Timothy Kaufman-Osborn, *Creatures of Prometheus: Gender and the Politics of Technology* (Lanham, MD: Rowman & Littlefield, 1997) 101.

[5] Gilles Deleuze and Felix Guattari, *A Thousand Plateaus* (Minnesota: University of Minnesota Press, 1987).