

03a>>Connecting Digital Pedagogy

Chairs: Thomas Seebohm, Aron Temkin, George Proctor

Connected Courses: Methods Of Network Communications

Thomas Seebohm, Aron Temkin

Where are we now?

In the recent NJIT survey of digital media in the design schools twenty-eight out of twenty-nine architecture schools reported to have networked design studios (NJIT, 2003). This would seem to indicate a ubiquity of digital media tools. While the use of these tools is still often limited to design presentation (computer aided drawing and modeling) rather than design generation, the studio is historically a place of discovery and experimentation: with computers so available in this fertile environment we are poised to evolve the medium forward towards improved design development.

This evolution is initially apparent in the way presentation methods and presentation processes are shifting. Not only are students becoming increasingly digital in their approach to design, but methods of working and presentation are also changing.

Virtual distance studios (also referred to as virtual design studios) pioneered by Jerzy Wojtowicz and colleagues in 1994 (Wojtowicz, 1994) capitalized on the newly available capacities of the internet and related software (white board, image-sharing, video conferencing) to link design studios in disparate locations and time zones. This opened the door to synchronous or asynchronous collaboration on designs and sharing of design reviews. Studios have evolved from this initial step to share information using internet databases, bulletin boards, dedicated chat rooms, and even shared design projects – with students collaborating from several locations (Johnson et. al., 1998). While as a means of expanding the dialog of a design studio beyond a particular place and time, this has also prompted the question, “how can we create better virtual places for the interaction to occur (Engeli, 1999). One the most sophisticated of these web-based environments is the ETH world project, a merger

of communications and information infrastructure (Carrard and Engeli, 2001). Herein, the school of architecture has set up, arc-line, perhaps the most sophisticated web-based infrastructure for allowing collaboration, project submission, viewing, reviewing design projects and access to design resources. Arc-line has been used effectively by up to 170 students at a time (Angeli, 2000).

Connectivity, therefore, has already changed the way architecture is taught in some schools with a new emphasis on collaboration and on seeking the virtual environments that encourage (and facilitate) these new methods of exchange. In non-studio courses changes are also occurring whereby web-based infrastructure supports the lectures, facilitates the handing in of assignments and encourages discussion outside the classroom. With wireless networking it is possible for students to bring their laptops to every class and to follow the lecture material simultaneously in the classroom and on their individual screens. Another expanding use of network technology is facilitating distributed design reviews where a critic or peer group is remotely but visually connected to a presentation through collaborative software (such as Microsoft Windows Messenger and Netmeeting). Presumably the current generation of architecture students will be well versed to work in digital environments where collaboration with other offices, locally or internationally is becoming routine. Most noted for such collaboration is the office of Norman Foster and partners where the use of extranets (really just a private portion of the internet with secure access available only to collaborators) has been pioneered to link distant offices. Concurrently, with networked studio environments comes the responsibility to provide adequate computing resources. This includes computers for students, output devices such as printers and plotters, projectors and display screens. Should schools provide computers for the students or should students be asked to supply their own? Should the computers be laptops or desktops? It raises issues about how much students should be expected to pay for their education.

Where are we going?

The internet bubble, for everything it was not, was nonetheless a remarkable moment in the history of communication and media. Despite the short-lived success of many e-commerce sites this explosion was a very powerful illustration of how new methods of connectivity can (and have, and should), expand the ways that we work, communicate, and teach.

In the architecture schools we are facing our own bubble: we are evolving the way we implement media, facilitate access to computers, and confront barriers of distance. As we get past these barriers of logistics and infrastructure we are free to revisit the questions:

- How does the way we work affect what we make?
- How should the ways we communicate affect the way we work?
- How can these tools of communication evolve the way we dialog (beyond the issues of who, where, and when)?
- Ultimately, what can we achieve that we could not realize before?

Perhaps a dialog regarding connectivity should distinguish a network as a delivery system versus a network as a web. Using a network as a delivery system, when dialogs occur back and forth connecting individual points (such as using email or a messenger interface), what we gain is accessibility. Using email I can reach someone in an office in Europe as easily as in the office next door. While this has obvious advantages over written mail, the nature of the dialog is still not far removed from a phone call or conversation. We expand this condition once we begin to email a list of people, and further still when using a chat room, the typed equivalent of a conference call. All of these methods permit a dialog with fewer boundaries – whether these boundaries are of distance or of time.

A web, on the other hand, if we follow the metaphor prescribed by a spider, is no longer limited to a linear dialog between two participants (or two participants at any one time). A web of information, in its most ideal form, is best considered as threads of an idea linked together at several points. The Wikipedia (www.Wikipedia.Com) is a great example of this model, while you can use it to link to a traditional reference source, the interconnectedness encouraged by the 'Wiki' culture and interface permits a path of discovery that is not longer limited to a single path of inquiry (or a single path of response).

We might go as far as to suggest that delivery networks are for seeking answers while web networks are best suited to seeking questions. When we ask a question in a linear dialog system we are not looking for an alternate view as much as we are looking for progress towards a destination. When we brainstorm (something of a real-time web) we allow ourselves to be usefully distracted by an alternative view or direction of inquiry.

With a web based dialog a thread may be conceived as either a beginning or an end. We put ideas (conceived as drawing as easily as words) out into a public (or semi-public) realm, opening the work up for discussion and response where we can just as

easily use a single intervention to raise larger issues of design. For instance, we can go beyond asking, "is this library design effective?" And open a discussion up to, "what should a library become?"

Research is already asking these bigger questions. One early example asked, "how can we evolve the way we search for precedent? In shape based reminding as an aid for creative design, Ellen Do and Mark Gross described 'reminding software' designed to link freehand sketches to an index of precedents. (Do and Gross, 1995). With a typical web search we must know what we are looking for: a student is limited by their foreknowledge of formal paradigms or their ability to translate a formal condition into a written description. With digital shape recognition a student's search is connected to the act (and product) of drawing.

What other connections can we make? Where the pursuit of connectivity begins at the physical level of computers, ethernet cables, T1 lines, and wall-ports, if we are going to justify the expense of these resources, of this infrastructure, then we must pursue the evolution of design process and design quality.

References

- Angeli, M., et al. (2000) Arc-line: architecture on-line, Swiss Federal Institute of Technology, Department of Architecture, See also <http://www.Ethworld.Ethz.Ch/nw/projects/details/22>
- Carrard, P. and Engeli, M. (Eds.) Conceptual competition ETH world: virtual and physical presence, GTA Verlag, 2001
- Do, Ellen Yi-luen, and Mark D. Gross. (1995) "Shape based reminding as an aid to creative design". Sixth international conference on computer-aided design futures. Pp. 79-89.
- Engeli, M and A. Mueller, (1999) " Digital environments for learning and collaboration, architecture, communication, and creativity". Acadia '99, Ataman and Bermudez eds., Pp. 40-52
- Johnson, B., Kurmann, D., Kolarevic, B., Schmitt, G., Hirshberg, U., "An experiment in design collaboration: Digital design studios, Do computers make a difference?", Acadia '98, Seebohm and Van Wyk eds., October 1998, pp.90-99.
- Wojtowicz J. (ed.) *Virtual design studio*, Hong Kong university press. 1994.

Thomas Seebohm is a registered architect and an associate professor of architecture in the school of architecture of the University of Waterloo, in Waterloo, Ontario, Canada. He specializes in digital design technologies and is currently focusing on these areas: digital design pedagogy; rule-based generative design and expert systems; double shell tensegrity structures, digital lighting design; and interactive, real-time, 3D architectural and urban modeling in stereo.

Aron Temkin is an Assistant Professor at Florida Atlantic University where he coordinates the junior phase and digital media components of the Architecture School curriculum. He received his Master of Architecture from the Cranbrook Academy of Art in 1997 and his Bachelor of Architecture with University

Honors from Carnegie Mellon University in 1992. His research explores digital modeling as a device for design refinement and animation as a device for temporal analysis of space. His professional practice includes graphic design, master planning, and architecture with an emphasis on sustainable place making. Through his built work he aspires to reconnect people to the variable conditions of their surroundings.

Digital Pedagogy: A- Digital Foundations: Building A Base For Digital Futures

George Proctor

Has “the digital” been absorbed by the discipline or has “the digital” absorbed the discipline? Depending on your perspective, architecture either continues to disintegrate or has reformed around a new definition of “the master builder.” Digital technology has opened a variety of new career opportunities for the graduates of a digitally advanced architectural education. Some depictions of this trend have the discipline of architecture continuing to fragment into specialties. However, software has established platforms from which the activity surrounding a design project can be directed, managed, and built. But, does the capacity of software to re-center what is required to make a built environment mean that the design and making of such will fall to the historic notion of “master builder” or “the architect”?

Much of what applies to the general education of an architect can also be said for the digital portion of architectural curricula. Some students come to the university with digital media skills, some are autodidactic, a large number are waiting to be taught, and some either struggle to absorb digital skills or probably do not fit a life in architecture. In the midst of this new landscape, sketching and drawing freehand has become more important and necessary. Ironically, less time is provided to build these “old” skills because more time goes to learning a variety of digital skills. Synthesizing digital media training and tool use into an already demanding professional curriculum along with the financial demands of upgrading and absorbing changes is overwhelming for students, faculty, pedagogy, and the institution. In light of criteria for connected courses, NAAB requirements may need to be reorganized to accommodate this paradigm shift.

George Proctor directs the digital media curriculum at Cal Poly, Pomona. He has taught digital media courses and design studios in digital design methods since 1993. His writings are in the area of digital tool use in studio and design education. Proctor chaired the 2002 ACADIA conference at Cal Poly Pomona.

