

REFLECTIONS ON THE VDS, PEDAGOGY, METHODS

George Proctor

After having conducted a Digital Media based design studio at Cal Poly for six years, we have developed a body of experience I feel is worth sharing. When the idea of conducting a studio with the exclusive use of digital tools was implemented at our college, it was still somewhat novel, and only 2 short years after the first VDS- Virtual Design Studio (UBC, UHK et.al.-1993). When we began, most of what we explored required a suspension of disbelief on the part of both the students and faculty reviewers of studio work. In a few short years the notions we examined have become ubiquitous in academic architectural discourse and are expanding into common use in practice. (For background, the digital media component of our curriculum owes much to my time at Harvard GSD [MAUD 1989-91] and the texts of: McCullough/Mitchell 1990, 1994; McCullough 1998; Mitchell 1990,1992,1996; Tufte 1990; Turkel 1995; and Wojtowicz 1993; and others.)

Each time we prepare this studio, an effort is made to "load" the problem statement such that the following list of issues is confronted, discussed and addressed:

1. The practice, ethics and social issues of web based communication tools
2. The impact of digital technology on building type and the urban landscape
3. Conceptual issues related to digital media use for real and virtual architecture
4. Creative design methods using digital tools
5. The synthesis of manual and digital media

The studios we have offered use projects that can be categorized as: Foundation Projects (i.e.-warm-up exercise); Recombinant Architecture (from Mitchell 1995); Urban Scale Recombinant Architecture; Large Scale Planning and Design; and Conceptual Space- Real and Virtual. Of course as would be expected, the results from each studio vary probably more with the caliber of students enrolled than it does with the design problem. The content of the whole curriculum at the school and the teaching methods used I suspect also affect which design problem and studio has been most effective in our VDS. (If these studios have been experiments, the sample being tested is too unpredictable to point to any particular project or design problem as an ideal). However, the results of the digital media and VDS studios conducted at Cal Poly Pomona have provided insights.

I have conducted fourteen digital studios since coming to teach at Cal Poly in Fall 1993 and have found a number of issues consistent in all of the studios.

1. Students need to have face-to-face interaction with peers and faculty to grow personally and to develop well thought through designs. The numerous attempts to design projects without physically meeting students, while thought provoking, often do not achieve results at a level

comparable to a studio in a physical setting. This suggests the culture of studio, competition and learning may be more difficult to stimulate and/or simulate without the physical setting. Or, that digital tools need to improve to satisfy this issue.

2. Students need to touch, feel or physically participate with their designs. This may reinforce another finding: most students struggle to think in three dimensions as they design. For example in my current studio, students began work with a series of 2d Photoshop compositions. Positive results flowed out of their printers as fast as could they could change Photoshop filters; there were no inhibitions about experimentation. When we transferred the 2d results from the 2d study into several modeling environments, experimentation and progress slowed to a crawl. It seems the underlying cause of slowed progress during the transition from 2d to 3d is still evident using digital media. In this transition I find a tendency by students to become overwhelmed with what must be understood in three dimensions. For the novice designer, the physical model seems to satisfy a need to tacitly resolve the making process. I know from staying in contact with ex-students this issue improves slowly over time.
3. When working through a design project students struggle to rationalize results from the new palette of tools software provides, e.g.- the capacity to create space without corners. Similar to the previous issue, I find students struggling to understand how to turn some of the complex curved forms generated in initial conceptual digital models into a usable building. Much of this has to do with the lack of real world examples; aside from Gehry or the products of industrial design. To some degree this issue parallels what happens when students use software with a heavy emphasis on existing conventions of practice- Archicad for example. Without experience or refined skills, I find students come to rely too much on the software and can not comfortably proceed with subsequent stages of design development.
4. Even though new tools do more faster, I still have to repeat software procedures three or four times to most of the students. Learn-by-doing is essential in a digital studio and in the support courses we offer; the software is best understood and retained through use. The procedural nature of using software also reinforces design process by association.
5. Students still procrastinate (some even more so) even with access to tools that help them work faster.
6. Sketching and diagramming grows in importance with the digital studio. Similar to 'two' above, sketching allows a physical interaction with a design process. Additionally, with desktop real estate absorbed by hardware, cartridges and software bibles, sketching is proving to be efficient, quick and readily postable to a wall surface. Students have digitized diagrams for graphic manipulation and modeling underlays since our first VDS. In other words the sketching guides of Ching, Porter & Goodman, Laseau and others still have great value to a VDS.
7. Good results require a significant time investment, a lot of study and trial and error; digital media or not.

Of course there are exceptions to these points and the results with cross-institution application may be much greater than what I have listed here. It is the majority of students, not the exception, who have provided the points above and the group for whom I have to plan most of my time.

In the current VDS at Cal Poly (Winter 2000), I have attempted to re-address the issues listed above. Students are designing a Chapel of the Sublime- a non-denominational place of worship and introspection. They have the option of designing a project for a sublime setting of their choice or, they may elect to design a chapel existing entirely in cyberspace. This is an upper division studio for which as prerequisites, I required students to fulfill a lengthy reading list and complete our animation/simulation course (form•Z, 3dsMax). All students, regardless of the site they select (real or virtual) are:

1. Digitizing a series of their own subliminally derived sketches, water colors and collages.
2. Systematically applying a series of filters to all of the images, searching primarily for aesthetically pleasing results. However, concurrent with the visual study, class discussion has been undertaken on the etymology of "sublime" and, lectures are being conducted on the history of religious architecture. This is meant to cultivate ideas in the students minds about their chapel.
3. The results from the photoshop study are then being used to create displacement maps, bump maps, and space warps to be used with simulation tools to generate a series of forms. A selected result becomes an initial massing model of the chapel. (The specific application of simulation tools varies by student and fits within a set of rules and principals established by each student for their chapel design.)
4. Students will find a site with sublime qualities on which to place physical solutions, virtual solutions will be built as a web site.
5. All students are using either three axis milled foam output and/or laser cut models to study designs.
6. 3d output is being used as a study model, by physically cutting, adding to and modifying forms.
7. All designs are being developed with both digital and manual skills regardless of the chosen site.
8. All designs are being posted onto student VDS Desks, Blue-line Online is being used for sharing data and maintaining correspondence.
9. All students will have the option of producing stereo lithography output of a completed design piece.

To see the status/results of the current and some previous Cal Poly Pomona digital studios, see www.csupomona.edu/~env/vds/

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EXPO 2000 PAVILION AND EXPOSITION: PRECEDENT STUDIES

Edgar Stach

Included in this article are two second year architecture graduate student precedent studies to understand the complexity of a built project and its functional, structural and spatial design concept. Students were instructed to 'disassemble' the building according to Form & Function, Structure & Construction, Materials, and Display Methods. Through the use of computer-generated models the students were able to understand the relationship between space and structure without having to physically travel to the pavilion sites. The computer offered the unique ability to explore a spatial study of buildings and places that no longer exist (such as the IBM Pavilion by Renzo Piano), as well as to anticipate the spatial qualities of spaces that are not yet built (similar to the Swiss Pavilion by Peter Zumthor).

Final analysis drawings were created through manipulating the computer models to explain the Space & Form (spatial hierarchies), Spatial Sequence (circulation, path & place, and exhibition sequencing), and Space & Order (structure, proportion, and systems).

Swiss Pavilion for Expo 2000 in Hannover

Angela Tirri

The Architecture

The Swiss Pavilion in Hannover is designed as "an integral happening of a direct sensual kind." The architecture is a labyrinth structure, open on all sides and connected through a series of corridors, atriums, and covered spaces. The walls of the pavilion are made of identically cut wood logs, stacked seven meters high. The wood is native to Switzerland. The pavilion contains no images, instead visitors will be immersed in the sensual experience of text, sound, and smell.

Each wall of lumber contributes to a larger stack or 'stapel'. There are twelve stapels in all. The technical rooms are elliptical shapes while the stapels are rectangular. The space between the stapels forms the circulation in the pavilion.

The exhibit is broken down into three parts: text, sound, and cuisine. The text exhibit fills the long rectangular volumes, while the sound and cuisine exhibits are located in the voids formed by the text exhibits.

Special acoustics are provided in each of the large sound rooms. Text is projected on all flat surfaces in the pavilion including the buffet areas, encouraging visitors to read and enjoy the cuisine.

The Words

The walls inside the pavilion are covered in projected text gathered from various literary works from various regions of Switzerland, Swiss authors, and statements from Swiss nationals traveling abroad. Circulation through the pavilion is dictated by the length and size of the text: long strips of text create light paths through the pavilion, while large blocks of words encourage visitors to stop and linger as they read.