The culture of design studios

Every architecture curriculum acknowledges the presence of a sequence of design studios as its most fundamental backbone. Design studios act as melting pots for the knowledge and skills acquired in theory, history, tectonic and media courses. The design studio is the domain in which the interaction between the master builder and the apprentice has survived until our days.

In a design studio, students are offered the opportunity to design under the mentorship of an experienced designer and in such a way develop the ability to produce creative design inferences. In a traditional design studio, the professor sets a design problem and the students work their way towards a solution making use of diversifies media as a means for communicating their design decisions to themselves, their peers, and their professor(s). At the core of design studio activity we find the design review.

A design review is an event in which design inferences are communicated seeking feedback from peers, design professionals and design professors. The most common format for a design review is known as a „pin-up review“. In a traditional pin-up review the students will pin-up drawings showing their design solutions and a group of reviewers takes turns to express their individual opinions about the merit of the design solutions. Every school
of architecture has a somewhat different culture for conducting pin-up reviews. Nevertheless, certain trends have evolved in history and can be addressed as mainstream practices.

Historically, pin-up reviews were also called “Design Juries“ because the attitude of the reviewers was oriented towards passing judgment on the merit of the designs and were frequently brutal in nature. The culture of such reviews was to intimidate the students and expose them to public humiliation as a means of motivating hard work and harden their emotional response to critique. It was frequent to see reviewers approach the pin-up drawings with red marker in hand and follow to deface the drawings in expression of lack of value. The same was frequently true with physical models that were sometimes picked up and thrown out the window into the school dumpster during a review. Considering that at that time most of the pin-up materials were original handmade drawings and laborious models, the experience of watching the product all those ours of hard work be destroyed was certainly traumatic.

In reaction to the culture of brutal design juries, the mainstream of pin-up review culture at this point in time is quite the opposite. In most schools, instructors and peers are very apprehensive about approaching a pin-up drawing, which in most cases is a plotted CAD drawing, and marking it up with constructive design suggestions. As a result of this, reviewers tend to limit themselves to talk, gesticulate and at most move their hands and fingers over drawings that appear to be precious media and not the teaching/learning resources they are suppose to be.

In the opinion of the author, mainstream design studio cultures have sway from the traumatic extreme of the past to the unproductive extreme of today. It is true that many schools are aware of these tendencies and as a consequence make a point on avoiding any of these extremes, but for the most, a tendency towards shying away from interacting with pin-up media is culturally imbedded in contempo-

rary design studio culture.

**Electronic pin-ups**

The implementation of virtual design studios has promoted the development and use of “electronic pin-ups“. The history of Internet-mediated communication of architectural information is rich in magnitude and diversity. In 1993 Jerzy Wojtowicz addressed this challenge, and opportunity, by the use of File Transfer Protocol in order to move CAD files between design partners (Wojtowicz, 1993). Later, with the advent of the World Wide Web, many studios around the world adopted collaborative protocols that were tailored to their particular operational objectives. In some instances, as in the case of Phase-X, the objective was to maintain around-the-clock and around-the-world collaboration on a design project (Engeli and Mueller, 1999). In other instances, as in the case of EVAL, the objective was to jury on-line design competition entries (Johnson and Kolarevic, 1999).

Electronic pin-ups are web sites that display the work of design students in ways that lend themselves for review. In most cases, electronic pin-ups permit zoom in/out functions, pan functions, and the suppression/addition of data layers. This is usually accomplished by means of a nested system of web pages and/or web-cad formats such as DWF (Drawing Web Format). The original objective of electronic pin-ups was to allow remote collaborators to review the design work of the students. In other cases, electronic pin-ups allow local collaborators and design instructors to review the work at any time. The Virtual Design Studios at Texas A&M University started to use electronic pin-ups in conjunction with traditional pin-ups in 1998 (Vasquez de Velasco, 1998). The students were trained on the production of posters in Adobe Photoshop. The posters combined scanned drawings, CAD documents, 3-D renders of digital models, and pictures of physical models. Shortly before a review the students would simultaneously convert their Photoshop files into
plot files and html files. The plot files were sent to plotters and the HTML files were sent to web servers. In such a way without much additional effort, the design work of the students was simultaneously available for traditional pin-up in the school and in the World Wide Web for review by their virtual reviewers and peers.

In 2000 the students of our Virtual Design Studios started to use Adobe ImageReady in conjunction with Adobe PhotoShop in order to add functionality to the Electronic pin-up. With that additional functionality it was possible to zoom in and out of the posters and replicate the effect of approaching a traditional pin-up in order to see more detail. Furthermore, on top of that additional functionality, CAD drawings where displayed in DWF format in order to allow not only zoom and pan functions but also the manipulation of layers in the drawings during the reviews. In 2003 the Virtual Design Studio at Texas A&M University stopped conducting traditional pin-up reviews and implemented the use of large-format interactive plasma screens for conducting electronic pin-up reviews at remote and local level. The use of electronic pin-ups and interactive plasma screens has dramatically changed the design studio culture of our graduate studios.

The following images illustrate the general characteristics of „Electronic Pin-ups“:

Electronic Pin-ups continue to provide service in their original role in Virtual Design Studios. By means

Figure 1
Electronic Pin-up of first semester M.Arch student.
The actual electronic pin-up is available at: http://archone.tamu.edu/~gvv_f02/Class_f02/Final_boards/Jin_rao/index.html

Figure 2
Electronic Pin-up of second semester M.Arch student.
The actual electronic pin-up is available at: http://archone.tamu.edu/~gvv_f02/Class_f02/Final_boards/Jin_rao/index.html
of Electronic Pin-ups virtual reviewers can visit the design work of our students and deliver valuable comments. Virtual reviewers extend the review capacity of the professors of record and in some cases bring a new perspective into the development of the projects. This is in particular true when professors in other countries or architects in professional offices question the default and/or academic design decisions of our students. The following URL address illustrates the implementation of Virtual Design Studios that combine an international and professional dimension: Electronic Pin-ups of completed projects are kept in a repository that can be used in a number of valuable ways. These are some examples: Design instructors can use the electronic pin-ups of previous semesters in order to illustrate their expectations in terms of design sophistication and project deliverables. This use of electronic pin-ups is critical in upgrading the level of design performance within a professional program. If the students have a clear idea of what it is expected from them they are likely not only to fulfill our expectations but are more likely to exceed them.

Recruiters for graduate design programs can reference potential applicants to outstanding work in electronic pin-up format and offer a clear understanding of the level of performance that the students of the program are expected to achieve. In many instances potential applicants will seek on-line examples of student work in the web sites
of the schools they are planning to apply to. We are constantly told by our new students that the availability of electronic pin-ups and the quality of the work that is displayed in such format has played an important role on their decision to apply or accept an admission offer from our program.

Potential employers can review the on-line design work of job applicants from our program. This is in particular important because in most instances design portfolios do not display compete projects but a collection of images that employers address as „eye candy“. The possibility of reviewing a compete project, in particular the Final Professional Study of the applicant is of great value on their hiring decision.

Because of the usefulness and magnitude of this depository we have perceived the need of transforming it into a library similar to the libraries we already have for managing our depository on research thesis and dissertations. The repository of graduation design projects at Texas A&M University is located at the following URL address: http://archweb.tamu.edu/college/degree_papers/search_projects.html

**Electronic pin-ups in large format plasma screens**

As previously mentioned, electronic pin-ups have been used for in-house reviews since early times in the development of our virtual design studios, but the technology used for displaying on-line images and interacting with them has evolved substantially. At first, electronic pin-ups were projected. This implied the disadvantage of having to lower environmental lighting and have no means for interaction with the media other than pointing out things by hand of by means of a laser pointer. In the fall of 2002 we started experimenting with the use of a 72“ rear-projection Smartboard that permitted considerable interaction with the media. We still had to lower environmental lighting and people sitting at the margins of the review space had problems viewing the images but the ability to interact with the graphics was overwhelmingly successful. In the fall of 2003 we started using a 61“ NEC plasma screen provided of an interactive Smartboard overlay and the culture of our pin-up reviews changed dramatically.

At the time of purchase, the 61“ NEC Plasma Screen was the largest plasma screen in the market. Because of its value (over $14,000 US), fragility, and weight (over 200 pounds) we were advised to mount it on the wall of a secure lecture or seminar room. Nevertheless, and against all natural wisdom, we decided to construct a heavy-duty steel cart able of carrying the 61“ plasma screen plus the Smartboard overlay. This was a critical decision because that way studio students could remain in their studio environment and the plasma screen could travel to any of the graduate studios for informal as well as

![Figure 5](http://archone.tamu.edu/~gvv_f03/)

A studio at Texas A&M University in which an interactive plasma screen is used for conducting electronic reviews. The following URL address contain the archived stream videos of electronic reviews that illustrate the interaction of students and professors with electronic pin-ups on a 61“ interactive plasma screen: http://archone.tamu.edu/~gvv_f03/ Please note that in order to view properly the stream videos you must install RealOne Player in your machine.
formal electronic pin-up reviews. These are some observations on use of electronic pin-ups via large format interactive plasma screens in the design studio:

- The students can continue to work on their designs until only minutes before the review. All it takes is to upload a final version of the drawings to the server and the student is ready to display his/her project for review. This means that the design instructor can call for a collective pin-up review without previous notice. In such a context the difference between a desk-crit (informal individual review) and a formal pin-up review is largely reduced to limitations on content and not format or quality of media.

- The professor can approach the plasma screen and make annotations over the interactive overlay. The annotations can be recorded by means of a screen capture function and sent to the student’s e-mail box for further study and consideration. The original media is not damaged, or in any way modified during the review process.

- Fellow students can (and frequently do) approach the plasma screen and annotate the drawings of their classmates making suggestions for improvement. If the suggestion is relevant the annotation is recorded and forwarded to the e-mail box of the student under review. If the annotation is not relevant, the display can be refreshed and a new idea can be explored.

- Professors can reference and actually bring to display on the plasma screen the electronic pin-ups of other projects that may serve as case studies in the explanation of a design solution or mistake. The availability of on-line project repositories can be of great value in such a teaching/learning dynamic.

- The review can be subject of recording using conventional cameras. The plasma screen will not display refreshing frequency bars. This means that the students can later re-visit their reviews and be self-critical about their presentation skills. Further more, the reviews can be broadcasted via streaming video to a geographically distributed and time-displaced population of potential reviewers.

Findings

In closing we can say that the use of electronic pin-ups and large format interactive plasma screens have reported both qualitative and quantitative benefits.

Qualitative benefits

- More flexibility for conducting pin-up reviews at any time.
- More time for design and less time in the production of pin-up material.
- More openness in informal reviews (students can more easily overhear and oversee the desk-crits of their classmates).
- More clarity in formal reviews (availability of zoom, pan, and layer manipulation on the pin-up media).
- More peer review interaction.
- More on-demand availability of case study material (making use of on-line repositories of electronic pin-ups).
- More reliable documentation of pin-up reviews (video recording).

Quantitative benefits

- Faculty student evaluations have improved in all studios making use of large format interactive plasma screens for conducting formal and informal design reviews.
- The amount of time that instructors need to invest in desk-crits is reduced due to the ability of students to follow the desk-crits of their peers.
- The amount of printed media is reduced substantially. This means that the students spend less money on printing and the college can avoid an escalation on the number of plotters it needs to purchase and maintain in operation.

Overall, the findings hereby presented indicate the great potential that electronic pin-ups and interactive large format plasma screens have in the design studio. We have hereby intentionally omitted ad-
dressing issues of design quality and consider it to be constant. We look forward to future experimentation that, in isolation from all other variables, may offer us evidence of benefits on that regard.

References


