From Pin-up to Slideshow:

Effects of Changing Media on 'crit' Assessment

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The assessment of architectural design project work, which forms the majority of the work produced by students in schools of architecture, is usually assessed through the process of critical review (otherwise known as a ‚crit' or jury). The traditional method of critical review usually involves the student describing work displayed on a wall directly in front of a panel of critics. Difficulties emerge when students wish to incorporate dynamic, computer generated content into their presentations. Architectural practice is increasingly turning to the 'PowerPoint' slide show as a means to communicate their work to clients, and this technology is often better able to incorporate dynamic content. This paper describes a comparative study, whereby students work is presented in both slideshow and pin-up formats to a panel of reviewers. The reviewers were able to evaluate the value of the two forms of presentation in terms of their ability to conduct critical reviews. Results suggest that whilst the slideshow method allows the reviewers to gain a reasonable understanding of the student's project work, they found it more difficult to provide useful feedback to the student on their design project work.

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The assessment of architectural design project work, which forms the majority of the work produced by students in schools of architecture, is usually assessed through the process of critical review (otherwise known as a ‚crit' or jury). Students present their work to a group of experts and fellow students and in return receive useful formative and summative feedback in terms of both staff and peer assessment. (Anthony 1991)

Whilst the traditional methods of presentation in a crit, where work is pinned onto a wall have on the whole been seen by teachers of architecture as successful[1], recent developments in C&IT have lead to the generation of a wealth of dynamic new media, such as three-dimensional computer models, virtual reality, animations, slide shows and human interactivity which lend themselves less well to presentation via the printed page. Research by Muriel Cooper's Visible Language Workshop at MIT (Engeli 2000 pp 33-38) gave an early indication of the extent by which this new media could benefit the process of communication beyond that traditionally possible.

More recently research has been carried out into the potential for using computer games interfaces in architectural presentations, achieving real-time renderings of virtual buildings as an individual interactively moves through the building (Hoon et al 2003). Whyte (2002 pp 73-98) provides an account of how virtual reality techniques have been used as a means of communicating design ideas both in terms of marketing and providing an interface for design review; a means to bridge a gap in understanding between client and designer. Students are often keen to incorporate this new media into their presentations and will often locate a computer screen as part of their exhibition. Nevertheless, experience suggests that review panel members pay scant attention to this, especially when in terms of physical size, printed materials occupy a relatively larger proportion of the visible exhibition, when compared to the computer based materials. Moreover, the often interactive nature of the computer presentation, means that that it may be necessary for a member of the review panel to ‚operate' the presentation using the mouse or keyboard, for which they may have insufficient technical abilities. This is unfortunate, given that the relevant information contained behind the small computer monitor, may well exceed that which is available on paper (Engeli 2000 pp7-18).

As an alternative to the traditional pin up, students may choose to present their work in the form of a PowerPoint type slide show. This is a mechanism that is now commonly used by architectural practice as a means of communicating ideas to clients[2]. Rather than exhibiting, paper based drawings in front of a review panel, the student would incorporate their drawings into a series of projected slides, which could be shown in a sequential manner. This has the advantage of enabling interactive and dynamic content to be easily incorporated. Furthermore, because the images are projected onto a large screen, they are likely to hold the attention of the critic to a greater extent than looking at a computer monitor. From a practical perspective, media exhibited in this way, is less likely to incur time consuming and often unreliable processes associated with generating hard copy prints and offer a more efficient use of space, enabling greater numbers of students to participate in review sessions. Engeli (2000) suggests that whilst this form of sequential presentation enables the generation of digital narratives in ways that have not previously been possible, she argues that a sequence of frames is restricted in terms of the information conveyed. In particular, she claims that it is very difficult to gain a holistic overview, when one can only see a single frame at any one point. Porter (2000 pp 74-84) describes how we visually scan a traditional architectural presentation, taking in information from overview to detailed levels. With slide show presentations, it may be necessary for the eye to scan the images in a different manner, relying to a greater extent upon memory, to gain a holistic overview. Sheldon et al (1995) have investigated ways in which these difficulties can be lessened, particularly in the case of crits conducted remotely via the internet. They argue that whilst at first, critics found computer presented methods more difficult than with a paper-based pin up, with practice, the process became easier.

The concerns with the newer media are reflected in experiences of digital presentations from the author's own institution. This has suggested that critics find it difficult to make relevant and useful formative comments when they are unable to make cross references between particular elements of the presentation, which they can more readily do with a wall based presentation, where all elements can be viewed simultaneously. Furthermore, critics express concern that with a student advancing the slides, the control of the discourse is passed away from the critics towards the student. In spite of this concern, such a transfer of control may be advantageous in that it ensures the critics attention is focussed upon what the student is currently saying. Anthony (1991, p109) suggests that it is imperative that critics listen carefully to a student's presentation, before starting to evaluate the work. Regrettably, her research suggests that this does not always happen.

The research

The present research was established to explore strategies that might enable the positive use of slide-show style presentations as a means to obtaining both formative and summative assessment of design project work. Initially, basic observations of critical reviews were carried out by the author in order to establish the information requirements of review panels. These findings are outlined in greater detail by Roberts (2004). Based upon these observations a comparative study was established, whereby students would present a piece of design work in both traditional and electronic forms. Finally the results were used to generate a set of guidelines that students could utilise when preparing electronic presentations, and to inform the generation of a toolkit that would enable students to present 3D models within PowerPoint presentations.

100 first year students from the Welsh School of Architecture, Cardiff University were asked to design a hostel for cyclists. The project lasted for three weeks, at the end of which the students were asked to present their proposals to a panel of critics by way of a traditional pin up. Upon completion of the first stage of the project, the students partook in a course introducing them to 3D computer modeling, during which they were expected to create models of their proposed cycle hostels. These models were then used as a basis for the generation of the electronic slide-show which was presented to a second panel of critics. It was decided that the second presentation should take the form of a ‚PowerPoint' type slide show that would be projected in a lecture format by the student, rather than through some more interactive hypermedia technique on a individual computer screen as described by Sheldon et al (1995). This enabled the traditional crit format to be followed as closely as possible with critics and students engaged in an oral, face to face discussion based upon the project work.

For practical purposes[3], the students were divided into thirty three groups of three. Each group was asked to choose one design scheme from their members to be further developed in electronic form (this choice was not necessarily based upon the best design, but rather the one that was easiest to model). Students were asked to produce a slide show, using Microsoft PowerPoint (chosen for its ubiquity, rather for its functionality) which would incorporate rendered CAD images, photomontages, diagrams, hand rendered images scanned in from the paper based presentation and an interactive 3D virtual reality walkthrough. They were asked to use the various technologies available to them to attempt to express some of the qualities and character of their schemes.

One of the benefits of using 3D computer models is that the model can be interactively walked though during a presentation using virtual reality techniques. Experience from previous cohorts had suggested that critics found it easier to engage with interactive walk-throughs than a pre-prepared animation. When a student is guiding the critic around his or her building in virtual reality, it creates a sense of occasion in which critics can feel involved. Furthermore, critics are able to ask students to move to a particular space in a building in order to discuss it in greater detail. Pre-prepared animations can feel somewhat remote, when running under the control of the computer. Nevertheless, with both interactive walkthroughs and animations, critics often express concern that it is difficult to discern where the current view is located within a building. In this project, the students were asked to use the commercial software NavisWorks (2003) to present their 3D models. NavisWorks is a realtime virtual reality design review tool, which will accept models from a variety of CAD packages which can be augmented with textures and photorealistic lighing effects can be incorporated. A particularly useful feature of Navisworks is its continually updating reference plan and sections which help the viewer maintain an identification of their current location within the scene.

Because of the limited real estate provided by a single monitor screen, two digital projectors were

provided, utilising the multiple monitor support features now available on many desktop computers which allows a computer's desktop to be stretched across multiple screens. With this facility, the students were able to show their interactive 3D model on one screen, and their PowerPoint slides on the other, allowing the possibility of cross referencing. Furthermore, placing Navisworks' plan and sectional reference windows on the second screen, meant that an unobstructed view could be shown on the other screen (Figure 1).

The reviews

The review panel in each presentation consisted of 2 tutors who were asked to individually complete a simple proforma for each student reviewed, outlining the extent to which they were able to gain an understanding of the students scheme's:

- relationship to the site;
- spatial organisation;
- materiality and construction
- and structure.

Each criteria was rated on a scale of 1-5 in terms of how easily the reviewer could discern that information from the visual and oral presentation. It was explained to the reviewers that a rating of 5 would represent a level of understanding that they would expect from an excellent presentation irrespective of the presentation media.

In the cases of both reviews, all students were reviewed during a single day. Unfortunately, for a variety of reasons, it was not possible for the two crit sessions to be conducted under identical conditions. Firstly in the traditional, paper based session, students were allotted to one of eight parallel review panels all running simultaneously in different locations. Limitations in terms of equipment availability, meant that all of the electronic presentations were conducted in the same location, with two tutors reviewing those students presenting their work in the morning and a further two reviewing the students work presented during the afternoon. In both AM and PM sessions, at least one reviewer had been in one of the panels for the paper based review. Secondly, in the first presentation the work presented was entirely the work of a single student. For reasons previously alluded to, the students in the second presentation were presenting as a group, although the underlying building that they were showing was the work of an individual. This meant that whilst 100 designs were presented during the paper-based review, only 33 were presented during the electronic review. Finally, in the first review each student was allocated 25 minutes for their entire review, whereas in the electronic reviews were limited to 15 minutes

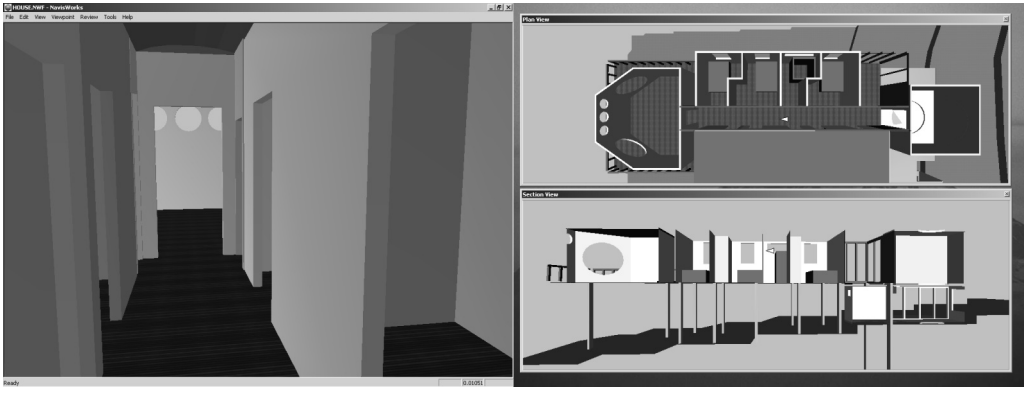

Figure 1
Navisworks with plan and section reference planes on two screens.

per group to ensure sufficient time for all students to be reviewed. Whilst this limited the time available in the second review for a detailed discussion of the architecture proposed by the students, it was felt that there was sufficient time available for tutors to gain the necessary information to complete the proforma. In addition to the quantitative data completed by the reviewer, the principal researcher made note of key comments made by the reviewers, related to the students‘ presentations.

Discussion of Results

It had been intended that the data from the two reviewers in each panel would be collated and a mean value derived for each presentation. Nevertheless, despite explicit statements on the proformas that each reviewer should complete their own ratings, a number of tutors in the first presentation agreed a single rating between them. Where this has happened the agreed value is taken to be the mean value. Furthermore a small number of the review panels did not complete the proforma at all. In the second session (where the project researcher was able to observe all the sessions), individual ratings were completed for all students from which a mean result was made. Overall, the reviews gleaned 22 studies for statistical comparison although in one case, a rating for relationship to site was missing from the first session, reducing the number of valid subjects to 21. Mean scores for each criteria were created, as well as for a total score, which represented the sum of the score provided for all criteria out of a possible 20 (Table 1).

IT had been predicted that because of the sequential nature of the slide show presentation, reviewers scores would be lower than for the pin-up presentation. A paired samples T-test was used to determine whether the mean scores for the computer presentations were significantly lower than the scores for the paper-based presentations. As predicted, the mean scores, for each of the criteria, and for the total score were lower for the computer based presentation, but this difference was too small to be statistically significant with respect to all criteria except for the reviewers‘ ratings for structure: here the grade provided was significantly lower for the computer based presentation ($p<0.01$). It is common for tutors to look at a combination of plan and section views to gain an understanding of a building‘s structure. It was unusual during the computer presentation for plans and sections to be shown simultaneously (at least for any significant period of time) and it is possible that this limited the reviewers’ abilities to understand the structural strategy of the student‘s design.

Whilst the statistical tests suggest that the reviewers were able to discern a similar degreee of understanding of the students proposals with both computer and paper-based presentations, observations of the tutors in the computer session suggested that they still found it more difficult to make spontaneous comments about students work following the presentation. The earlier observational study had shown that with the traditional crit, there is a moment after the student has finished speaking, when there can be a silence, whilst somebody derives a suitable comment or question, it was apparent that

Element	Wall Presentation	Slideshow	Significance
Relationship to Site	3.9	3.7	Not significant
Spatial Organisation	3.6	3.6	Not significant
Materiality and Construction	3.4	3.1	Not significant
Structural Strategy	3.5	2.6	Significant ($p<0.01$)
Total	14.5	13.0	Not significant

Table 1
Mean scores for each evaluated element.

this was more common with the computerised crit. One reviewer commented, that „it was really quite difficult to think of a good comment". Furthermore, there was a strong tendency for the reviewers to comment on the presentation techniques, rather than the architecture that was presented. The reviewers did however comment that they found having the two screen setup useful in gaining an understanding of the students work. It is possible that whilst the reviewers could gain an understanding of the student's proposals relatively easily, which might include a ‚gut feeling' about the quality of the architecture from the presentations given, it was difficult to make comments because the students materials were not immediately available to make reference to following the presentation. The observations of traditional crits suggested that reviewers frequently make reference to the student's drawings when questioning or commenting on a student's scheme. Furthermore, they are likely to make reference to elements from a variety of the students drawings to assist them in developing their argument, even before they have began talking. This is easy when all drawings are pinned onto a wall but when projected electronically, the reviewer is forced to refer to a memorisation of the projected images (which are often shown for a very limited period of time) in order to construct an argument. To memorise students' work in these conditions is almost an impossibility. It is possible reviewers could navigate though a student's work on the computer, in order to construct an argument, but their musings would be conducted in full view of all participants possibly during an awkward period of silence. In a traditional presentation this would be done by a simple sideways glance towards a different drawing. This difficulty was in part alleviated, by asking students to place their presentations in PowerPoint's ‚slide sorter' view at the end of the presentation, providing a useful overview. Whilst the images shown were thumbnails, they appeared to help to stimulate the reviewers' memory. Difficulties however, still emerged when the students had created more slides than would fit on a single screen. On occasions reviewers did ask the students to go back to a particular slide, so that a particular point could be made, but it was rare for the reviewer to take control of the computer, particularly those reviewers who were less experienced with using computers.

Almost all of the students presented a 3D interactive model in Navisworks. Few however, made a deliberate attempt to make use of the updating plan and section reference views as part of their presentation (Figure 1). This can be attributed to a number of reasons: firstly the plan and section views default to a roof-plan and elevation views, rather than a floor plan and section. The students need to adjust the settings for these views if they are to represent floor plans and sections; unfortunately Navisworks does not save all of these relevant settings. Secondly, these views tended to obscure the student's PowerPoint presentation. Thirdly, the students (who by this stage were very familiar with the schemes that they were showing) did not appear to realise that these reference plans were helpful to the reviewers who were less familiar with their schemes. As the crits progressed, one of the students in each group was asked to physically point out the location of the current 3D view on a plan, whilst another member of the group, navigated around the model. This was felt to be particularly helpful in gaining an understanding of the spaces within the building.

It was also noted by the reviewers that some of the 3D models were more legible than others. This was reflected in the scores provided by the reviewers for spatial organisation. On the whole models that were heavily textured, gained lower scores for spatial organisation, whilst those who had kept their surfaces plain, but where the lighting was well modelled gained higher scores. The presentation method appeared to be particularly successful at showing the context of the building, and relationship to the site. Presentations that used the sequential nature of the PowerPoint presentation to tell a story about the derivation of their ideas were also seen to be successful.

Conclusions and areas for further development

The results from this study suggest that overall, a projected presentation, that consists of a PowerPoint slide show, shown simultaneously with a 3D virtual reality model can provide a similar degree of understanding of a students ideas than might be possible with a traditional wall mounted presentation. Nevertheless, in a review situation, it can be more difficult for reviewers to generate helpful comments based upon electronic presentations. Whilst this may be a result of an inability to see multiple images simultaneously, it is also possible that this is related to unfamiliarity of the media by panel members. With practice, it is possible that reviewers become more confident in reviewing this type of presentation.

Digital slide show presentations are still in their relative infancy and there is little information available that may help students, and indeed architectural practitioners develop their slide show presentations as an effective means of communicating design ideas. The research has led to the development of a series of good practice points that can be followed by those planning to use this form of presentation (Roberts 2004). Furthermore, it has led to the development of a set of Visual Basic tools that would enable interactive 3D scenes to be better integrated into PowerPoint presentations, with updating plan and section views and to allow PowerPoint presentations to appear on two screens. This research has provided a useful insight into some of the possibilities available but there is a requirement for further research in this area, looking in more detail at how presentations can be designed and structured to allow the recipient to achieve a clear comprehension of the ideas put forward and to enable the generation of subsequent discussion.

References

Anthony, K: 1991, Design juries on trial: the renaissance of the design studio, New York : Van Nostrand Reinhold

Doidge, C., Sara, R., & Parnell, R.,(eds): 2000, The crit : an architecture student‘s handbook, Architectural Press, Oxford

Engeli ,M: 2000, Digital stories : the poetics of communication, Birkhauser, Basel, Boston.

Goldman, G: 1997: ‘Architectural graphics : traditional and digital communication’, Prentice Hall, Upper Saddle River, NJ

Hoon, M. , Jabi, W. and Goldman, G: 2003 Immersion, Interaction, and Collaboration In Architectural Design Using Gaming Engines, CAADRIA 2003 [Proceedings of the 8th International Conference on Computer Aided Architectural Design Research in Asia / ISBN 974-9584-13-9] Bangkok Thailand 18-20 October 2003, pp. 721-738

Navisworks: 2003 User Manual, Navisworks Ltd : Sheffield

Porter, T :2000, Selling Architectural Ideas, E & FN Spon, London, New York :

Shelden, D., Bharwani, S., Mitchell, W.J. and Williams, J: 1995, Requirements for Virtual Design Review, Architectural Research Quarterly 1(2), December, pp. 80-89

Roberts, A., (2004) From Drawing to Powerpoint: Final Report of the Cardiff University Year of Assessment Project on the effects of changing media on Crit Presentation, Centre for Education in the Built Environment Working Paper No 2. CEBE: Cardiff. Available at http://www.cebe.ltsn.ac.uk/transactions/

Whyte, J: 2002, Virtual reality and the built environment, Oxford : Architectural Press

Footnotes

1. Critical debates about the nature of the crit have generally centred around its adversarial nature, rather than its modes of presentation (Anthony 1991, Doidge et Al 2000)
2. A survey of 60 architectural practices conducted by the author showed that the majority of practices used PowerPoint (or similar software) as a means of communication with clients.

3. Given the limited time, and demands upon the students it has been usual to allow the students to work in groups when learning computer modelling so that the workload can be shared, and the students have the opportunity to learn from each other.