Aspects of Information Technology in Design Atelier

Invited Paper

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INTRODUCTION

It is early morning at my home in Vancouver as I prepare to go to work. Instead of putting on a shirt and a tie, I throw on a housecoat. Instead of looking for the car keys, I sit down at my Macintosh and turn on my modem. The computer has become my primary commuting vehicle. My day's work begins as I log-in remotely to HOLLIS' and look up a few references for this paper. I review a new CD-ROM based journal[2] which contains an interesting lecture by Josep Lluis Mateo. I check my e-mail at UBC[3] and answer a request from a graduate student for a CUseeMe[4] session and a remote thesis critique. The video frame rate is poor and I begin to wish I had ATM' instead of ISDN[h] — I could truly interact with my students in real time. Next, I post my critical feedback to the Electronic Design Studio[7] in Miami. Finally, I download my electronic agenda from the school's server and read the list ofmeetings. Oops! In spite of this investment in the Information Technology my telecommuting has to end. A faculty meeting has been scheduled for the afternoon, so 1 disconnect and look for my car keys.

While the incoming architecture students today are of the

Figure 1. Desktop video-conferencing sessions illustrating synchronous aspect of distanced collaboration, Virtual Design Studio, 1994.

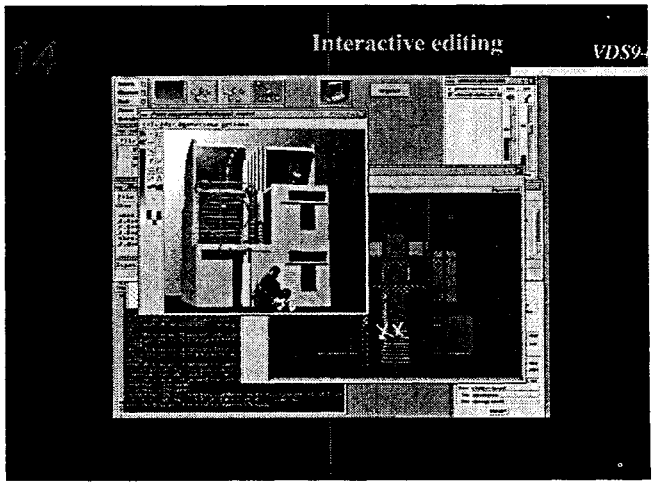

Figure 2. Collage session, illustrating synchronous aspect of distanced collaboration, Virtual Design Studio, 1994.

Nintendo generation, having grown up with some form of computers — most design tutors have yet to enter the Information Age. This dilemma gives a unique opportunity to redefine design education.

WEB

The impact of the Web on design academia and practice is already perceptible and it will become massive once broadband networks are more widespread. Can the change we are witnessing benefit the academic community, or will it sanction its fragmentation? In spite of this uncertainty, the potential of Information Technology (IT) in enhancing teaching and learning is rapidly being explored by many.

Academia's long established concerns of creation, validation, storage and dissemination of knowledge are being challenged. The challenge comes from an emerging generation of independent providers via an aggressive engagement of Information Technology. "True, communications technology will link the information resources of the globe. But as one connects in new ways, one also disconnects the old ways. Thus, while new communications technologies are

likely to strengthen research, they will weaken the traditional major institutions of learning, the universities."[8] The Atelier format of design education, familiar since l'Ecole des Beaux Arts will also have to change if the Internet's potential to empower individuals materializes.

What, then, is the impact of IT on Design Schools? Until very recently IT was the domain of the initiated few, who associated in ACADIA could trace its academic lineage to a one or two professors and institutions. The early computational tools labeled as CAD were part of a specialized and somewhat peripheral discipline in many Schools of Architecture. The pragmatic aspect of the machine was never questioned, as CAD has found its way into the production aspect of the architectural practice first. It took much longer

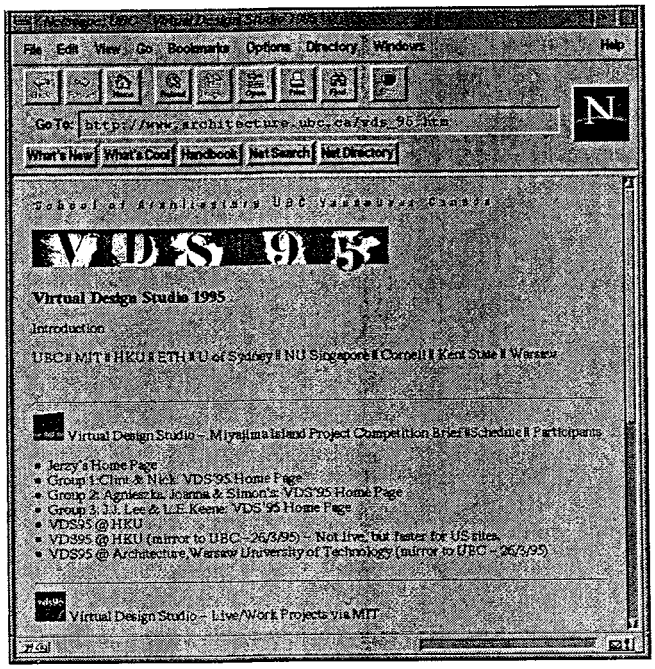

Figure 3. Asynchronous aspect of distanced collaboration exemplified by 1995 Virtual Design Studio WWW page.

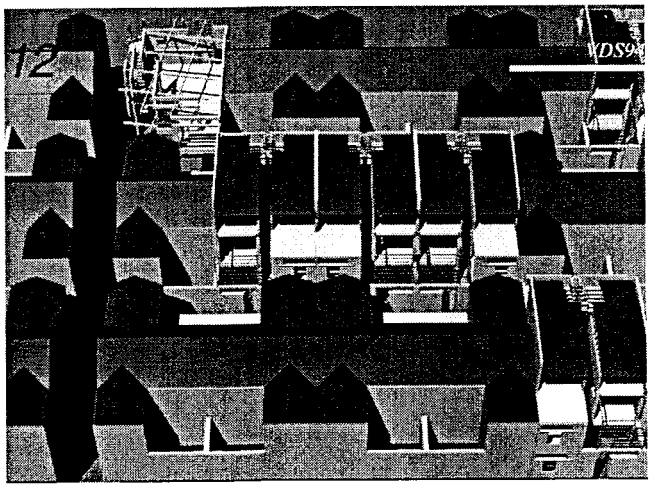

Figure 4. Collaborative Li-Long Project with interventions from MIT and UBC, VDS 1994

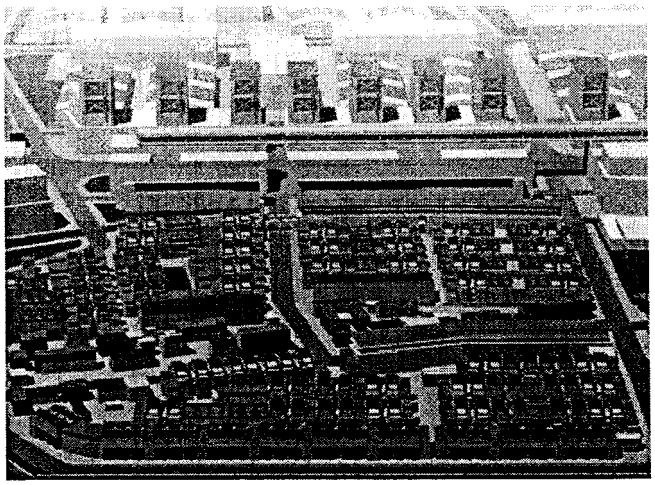

Figure 5. Typology of Li-Long Housing re-applied in Urban Design Proposal for Pudong in China by Wojtowicz. Gillard, Erickson, 1994.

for young designers to engage the machine in the creative process of computer-mediated design.

At the UBC School of Architecture the computer was introduced into the curriculum and at once relegated to the confines of the Computer Lab. Slowly, helped by its power of representation and simulation, the machine is being accepted into the studios. Yet, the mainstream, avant garde design tutors remained long skeptical of this emerging subculture and immune to its creative potential. This initially elitist area of curriculum involving Information Technology is rapidly becoming populist and as such it is about to radically affect the nature of design education.

VDS PROJECTS

Networked communication is transforming our lives by giving us new methods of direct access to distanced individuals and issues. The Virtual Design Studio experiments illustrated here were using networked communication to put design students and tutors from around the world into the same virtual studio as if they were working at adjacent desks. The pilot projects connected students in North America, Europe, Australia, and Asia.

It started just five years ago and we were still using painfully slow 2400 baud modem to transfer files over the regular phone lines while working on the Samarkand competition[9]. Today we are about to embark on ATM technology with its astonishing transfer rates. Teaching design at distance in the networked environment was initially attempted in early 1992 when Harvard students connected via the Internet with the UBC studio in Vancouver to design a concrete tilt-up building. Design ideas were exchanged using FTP and email messages. For the final jury speaker phones were used and images were displayed in sequence on the mirrored digital pinup server.[10] In January, 1993, the Virtual Village Studio was organized as a three week long project between MIT, HKU, and UBC and WU. In spite of

the bandwidth limitations, this project firmly linked the participants in establishing the importance of asynchronous and synchronous modes of collaboration."

The first video conference jury using PictureTel technology was done in the fall of 1993 at the termination of the Electronic Cafe Project between Washington University in St. Louis and UBC.[12] The term Virtual Design Studio suggested by Bill Mitchell became accepted" and 1994 brought desktop video to the VDS, in the form of CUseeMe from Cornell, and a realtime interactive collaborative environment of programs like Collage and design reviews, attended also by Barcelona[14]. The 1995 studio was further enriched by the WWW environment and the contribution of architecture students from Europe and Australia. The agenda for future Virtual Design Studios will build on the past educational experiences and should include VRML, ISDN, Java, ATM. It will also continue the reach for the elusive CONTENT, the dilemma characteristic of the new media and IT based design instruction.

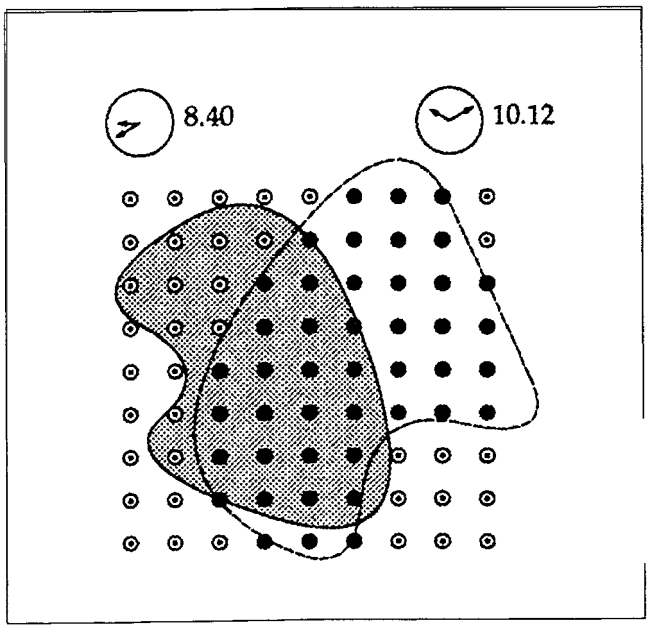

Figure 6. Diagram. VDS membership varies with time and is not space dependent.

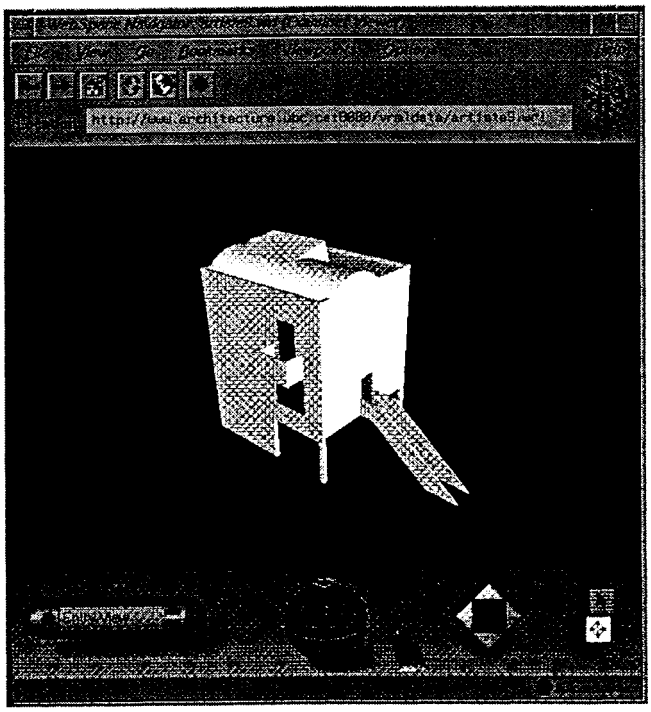

Figure 7. With VRML (Virtual Reality Modeling Language) viewer like Webspace allows one to access 3D model at distance, in the real time. This will soon lead to the development of immersive environments accessible over the WWW.

WHAT IS SIGNIFICANCE OF VDS?

At UBC, several intercollegiate projects stressing collaboration over wide area networks have been attempted recently. Why do these brief and modest projects deserve such continuous exposure? The Virtual Design Studio (VDS) points to a new way of practising architecture and teaching design. By demonstrating how to conduct a long-distance studio across the boundaries of space and time, it explores asynchronous and synchronous techniques in design collaboration. By publishing the process and results of the Design Studio on the World Wide Web (WWW), the move towards the democratization of design education has begun. The World Wide Web pages provided a repository for representing and evaluating all design project information that is accessible to both participants and casual observers of the project.

The new tools create new conventions and conditions. A workstation with an intensely focused designer who relates only to its current screen can be seen as very limiting in comparison to the traditional Atelier environment. To deal with those limits in my past electronic based studios I encouraged analogue pinup areas next to workstations, as well as active sketchbooks. This helped to retain some of the traditional studio atmosphere and to limit the antisocial impact of the new media. Collaborative element of VDS was initially seen as welcome solution to the problem. However, in my most recent design tutorial, I discovered that a third of my students had their own CAD machines and most of them were able to dial in and post their projects on their WWW pages from home. This led to extended absences from the studio, which I tolerated. Apart from mail reactions, casual feedback from student to student was limited during this process to structured review meetings. A disintegration of the traditional design studio pattern was observed.

This trend of VDS has both positive and negative aspects to consider. It attests to the growing IT literacy among the incoming generation of students. Some believe that the problem of introducing new media and computing is being solved by itself and rudimentary introduction to the machine is not longer needed. This is particularly welcome by the Administration, as one can ask students to get their own machine and faculty can focus again on teaching of architecture as we knew it.

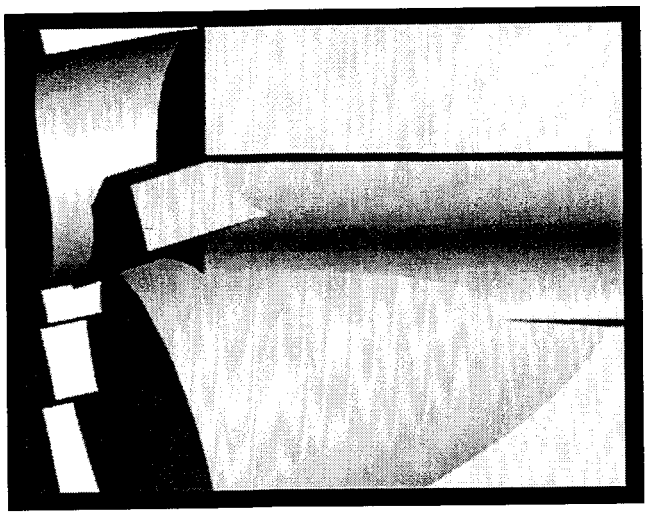

Figure 8. Not page, but interactive screen. From the forthcoming CD-ROM based multi-media monograph publication titled: Digital Vignola: Descriptive Geometry and Classical Moulding, Wojtowicz, J., UBC, 1996.

On the other hand, this phenomenon illustrates a disintegration of the traditional studio teaching. A studio characterized by the distinct sense of social space is as much about teaching done by the critic as by the fellow student from the adjacent desk. The new trend of telecommuting to the design atelier radically changes its nature. After all, the social structure combined with the informal teaching interaction was always a part of the traditional studio and no ethernet can substitute a social net. In my current design tutorial I am actively trying to compensate for this by giving much more time for get together show and tell parties, brainstorming, and discussions to compensate the impersonalization of IT.

We need to do much more work on reconstituting some new version of this social space, if future designers are to work together while physically apart. Furthermore, VDS projects deserve exposure, because of the growing consensus that importance of design network and computer as an instrument for communication surpassed its initial role as design automata. Castell argue that we are witnessing a second transformation of modern times characterized by a decentralization of different modes of production and a flexibility in its location. Distance education and collaboration are manifestations of this transformation bringing radical changes not only to our professional habits, but to the urbis and orbis.

CONCLUSIONS

Today the new media of the age of Information Technology and Web in particular presents a unique opportunity for a much wider exposure of architectural design to new audiences reachable across boundary of time and space. The condition of change carries an element of risk as well as opportunity, and this opportunity has to be addressed if we are to retain the design studio model and its seminal position in design education.

The agenda for design schools at the threshold of the XXI century is no longer the realm of science fiction and the technical aspects of electronic design studios are no longer complex. Shrink wrapping basic design skills instruction, as well as recording outstanding lectures is quite feasible with new media and CD-ROM technology. Exploration of synchronous and asynchronous modes of design collaboration is now practical due to the WWW, desktop video-conferencing and broadband networking.

A recent report of the Information Highway Advisory Council to the Government of Canada[15] signals the most significant political event of 90's (next to the Quebec Referendum). Among the central issues recognized in this document is a National Universal Access Strategy to the Internet. Once implemented, the nature of design education and practice in Canada will change rapidly.

Virtual Design Studio probes the limits of this forthcoming change. The change epitomized by the WWW based design studio is not just about publishing and accessing information. More importantly, it is about exploring new, interactive modes of communication and new media accessible to both the participants and to the casual observers of a project. Combined with the emergence of social space during the VDS experiments, we are perhaps witnessing a move from the elitist to populist nature of architecture.

NOTES

[1] HOLLIS (Harvard OnLine Library Information System), or Widener in my days. Its URL is: http://www.harvard.edu/home/library.html

[2] CD ROM based Architectural Journal, *Registros De Arquitectura,* published in Barcelona and distributed by MIT Press.

[3] Author's email: jw@architecture.ubc.ca

[4] CUseeMe is Internet based desktop video-conferencing software from Cornell, Its URL is: http:/lmagneto.csc.ncsu.edu/Multimedia/Classes/Spring94/projects/proj6/cu-seeme.html

[5] ATM (AsynchronousTransfer Mode) is approximatly 10 times faster than Ethernet LAN, which in turn is faster than ISDN. The ISDN connection is about 5 times faster than commonly used high speed 28 800 modem.

[6] ISDN (Integrated Services Digital Network) makes desktop video conferencing feasible and telecommuting a reality.

[7] University of Miami, Williamsburg Competition, Digital Jury, URL: http://rossi.arc.miami. edu/studio/fall95/william/regf95.htm

[8] p.247, Noam, E. M., Electronics and the Dim Future of the University, *Science,* v. 270, October 1995.

[9] p. 96-97 *Digital Folio*, Wojtowicz (ed), UBC 1992 . Also Wojtowicz & Davidson, Poster Presentation CADD Futures, ETH, 1991.

[10] Wojtowicz,J. , Davidson,J.N., Mitchell, W.J., *Design as Correspondence,* , Proceedings, ACADIA, 1992.

[11] Wojtowicz, P. Papazian, J. Fargas, J. Davidson, N. Cheng ., Asynchronous Architecture, in *Education and Practice: The Critical Interface,* Morgan, F., Pohlman, R., (ed), ACADIA, 1993.

[12] Van Backergem and Wojtowicz, *Electronic Cafe: Towards Virtual Design Studio,* Design Representation Journal, 1994.

[13] The term Virtual Design Studio was used and defined by Willam Mitchell at his talk at MIT Media Lab in Feb. 1993.

[14] VDS projects were published in ACADIA Proceedings, 1994, in book form: Wojtowicz (ed), *Virtual Design Studio, HKU* Press, 1995. Check URL: http:i/www.architcture.ubc.cal

[15] *The Challenge of the Information Highway,* Minister of Supply and Services, Canada, Sept., 1995.

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