Virtual/Reality:
Digital Media and the Design Studio

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INTRODUCTION

Cyberspace offers a somewhat frightening yet nonetheless challenging and exciting arena for architects and designers to explore. Although many of us have started to inhabit the virtual world in order toconduct business (through telebanking and teleshopping), seek entertainment (in the form of interactive simulation games) and interact with others (by creating virtual communities such as chat-rooms and multi-user dungeons), cyberspace's current impact on architecture and interior design is almost negligible. As William Mitchell points out, "we are entering an era of electronically extended bodies living at the intersection points of the physical and virtual worlds, of occupation and interaction through telepresence as well as through physical presence, of mutant architectural forms that emerge from the telecommunications-induced fragmentation and recombination of traditional architectural types, and of new, soft cities that parallel, complement, and sometimes compete with our existing urban concentrations of brick, concrete, and steel."' In spite of Mr. Mitchell's claim, the architectural discourse has at present not yet produced a critical dialogue between state of the art technologies and traditional methods of design.

In an elective design studio, *Virtual / Reality: a design proposal for a LIBRARY FOR THE FUTURE, l* have attempted to create a bridge between these two worlds. The students followed Bill Mitchell's dictum of "fragmentation and recombination," and engaged in playful explorations of typology and history, forms and spaces, elements and their meaning, and patrons and library activities. The program for this studio involved a three-step process: in *TYPE AND STYLE* students analyzed historic libraries ranging from Michelangelo's Laurentian Library to Steven Holl's Amerika Gedenkbibliothek; in *PHYSICAL SPACE* they utilized the outcome of their investigations to help generate the design of a small library; and in *SIMULATED SPACE* they translated the many and varied paths one might take through a traditional library into an interactive exploration of its virtual counterpart.

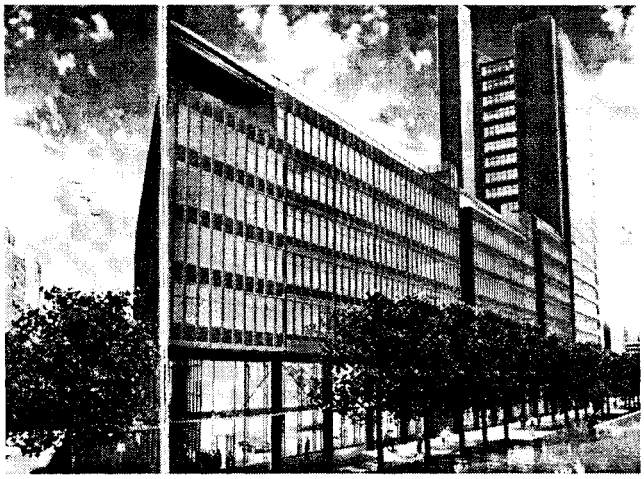

Fig. 1. Public Space - Berlin 2000.

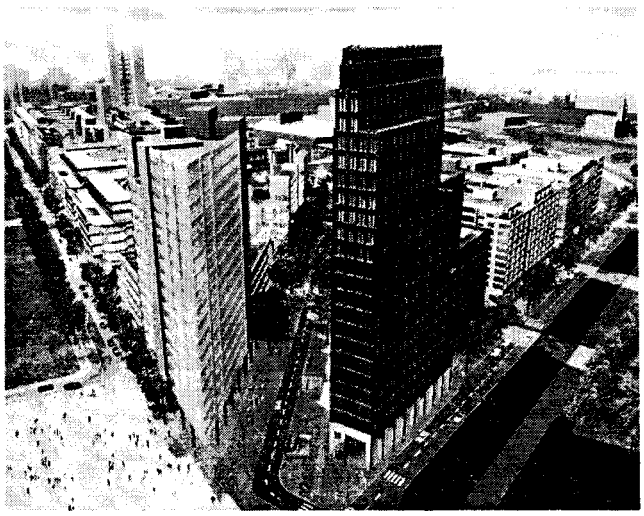

Fig. 2. Skyline - Berlin 2000.

BERLIN 2000 - A COMPUTER SIMULATION

Another beautiful day in Berlin; the sky is blue with a few

clouds scattered in the background. Two high-rises mark the entrance to the triangular site of Potsdamer Platz: one a transparent mesh of steel and glass, the other opaque, clad in brick, with many rectangular openings. The camera zooms towards the street capturing slow moving cars and pedestrians strolling along broad, tree-lined sidewalks. We enter the site between Kollhoff's brick tower and Renzo Piano's light-weight high-rise and move past residential complexes and office buildings towards the casino and the musical theater in the background. Along our route the facades become more transparent, revealing complex and animated inner spaces. As we move beyond the buildings, we reach our final destination: a beautiful blue lake surrounded by trees whose mirror images reflect of the water's surface. The cliché is complete when several swans and their offspring glide lazily through the water.?

This simulation, shown by *debis Immobilienmanagement* as part of their sales campaign for the new development of Potsdamer Platz, demonstrates the current sophistication of computer animation. In their promotional video, buildings become real through their transparency, illumination, and materiality; moving cars and people enliven the architectural landscape; and trees and their patterns of light and shadow suggest the presence of wind and warmth. Unfortunately, this type of simulation does not go beyond the traditional architectural model. It is in principle nothing more than a mock-up, generated after the fact from 2-D drawings that have been idealized and beautified with a focus on the exterior. The medium was neither used to generate the designs nor to develop new architectural forms or building types. Simulations such as this fail to reinvigorate the architectural design process.

Many projects undertaken in Architecture schools also shy away from a truly innovative use of the available technology. Here computer simulations have been used to enliven the presentations of traditional designs; to model historic structures, such as the *Barcelona pavilion* or the Citadel *of Midea*; or to generate educational environments of unbuilt masterworks, such as Giuseppe Terragni's *Danteum* or Tony Garnier's Cite' *Industrielle*. Although these projects are important case studies that help students acquire skills and communicate design intentions, they do not challenge the assumptions underlying the traditional design process. They have little impact on the things we think about, the tools that aid our thought processes, or the environments that inspire our thoughts.[3]

VIRTUAL I REALITY: PHYSICAL SPACE

In the first two phases of the design program, the traditional library as type served as the point of departure. The analysis of libraries from a period spanning almost 500 years provided the principles, parts, and patterns for the design of a small library for a community of 20,000 inhabitants. These elements, when questioned, transformed and recombined, were used to generate a hybrid solution, a building catering to past and future library functions. Following William Mitchell's

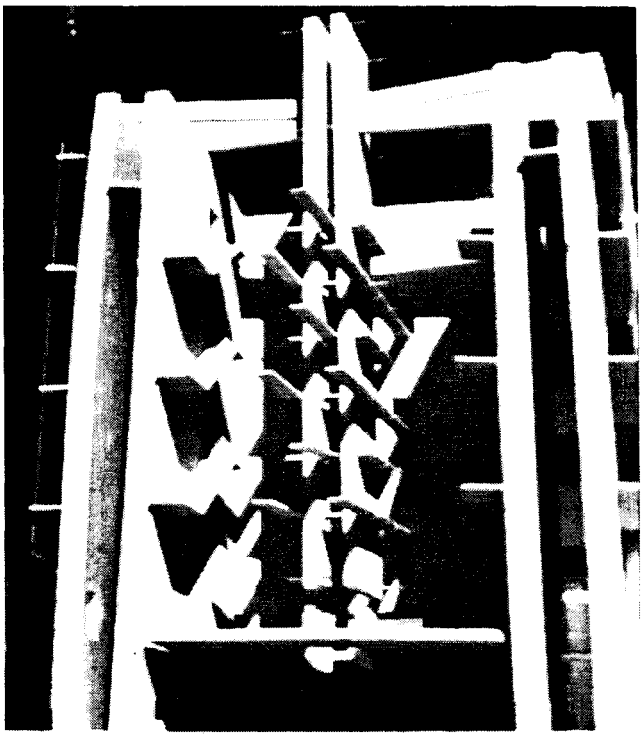

Fig. 3. Real Library, model - Jessica Boughrum

suggestion, the students looked for "new ways to accommodate human needs by recombining transformed fragments of traditional building types in a matrix of digital telecommunication systems and reorganized circulation and transportation patterns."[4] Although far from laying down the rules for the design of virtual spaces, Mitchell has nevertheless suggested the use of bricolage: a theoretical tinkering by which individuals use objects around them to develop and assimilate ideas.[5] This method proved to be the most successful for the students in the design of projects that straddled the threshold between real and virtual.

In past library designs exterior elements have articulated the greatness of the collection and the preciousness of knowledge through their volume, inscriptions, elaborate entrances and raised plinths. In today's information society, however, these elements, which tend to operate as barriers, are no longer fundamental to the design of a library. The focus of the studio's design was thus shifted from the exterior to the interior. The students concentrated on sequential movement (from individual to public to individual), browsing and discovery (through ramps that present a series of directional options) and easy access to all collections (through a metropolitan subway system as circulation system). This shift away from the geometric patterns of the traditional parti to the experiential aspects of movement, from the often standard critique of external models still practiced in most architecture schools to the internal experience of the library patron, led also to new forms of presentation for the students. They employed large-scale foamcore models, lights, scale figures, and, most of all, a camera moving at eye level to generate a short digital animation that gave them the tools necessary to

work on the next project, the virtual library.

VIRTUAL I REALITY: SIMULATED SPACE

> Virtual reality offers unique design opportunities, because virtual reality has no material constraints. There's no material in it, by definition. It's all just moving pixels, so anything can look like anything; all it takes is someone willing to invest the time and effort to make it look that way. Nothing every rusts, nothing breaks, nothing collapses; it just gets diskwiped. There are no laws of physics in virtual reality, no entropy, no friction. Virtual environments, therefore, can absorb infinite amounts of manpower, infinite amounts of design ingenuity.
>
> – Bruce Sterling[h]

In *Simulated* Space, the last studio sequence, elements of the previous design were electronically transformed, reconstructed, recombined and relocated. Sequential movement through simulated space emerged as the sole ordering principle common to all proposals. Each interactive visit, however, remained unique, depending upon the individual's selection or preference. Several sources provided the tools for this undertaking: texts by Nicholas Negroponte, Howard Rheingold, Neil Postman, William Mitchell, and Bruce Sterling introduced students to the potential and the social ramifications of the electronic medium and sparked their imaginations without prescribing design strategies. **A** brief introduction to film making[7] and a critical analysis of various TV advertisements provided ideas for scripting an interactive visit through their virtual library. Finally, the students' personal experience with libraries and their attitude towards books and the knowledge contained within, honed through analysis of built examples, site visits and previous design exploration, contributed to the emergence of their virtual designs.

Virtual libraries remain free from many of the constraints common to their physical counterparts, which have to take gravity, materiality and predefined movement patterns into account. Since the advent of cyberspace the function of libraries has shifted from book storage to information exchange.[8] This has led Andrea Moed to remark that "for the first time, the library provides the means to look beyond its walls."[9] Investigating the wall, the element that has defined, inscribed, and limited space throughout architectural practice, thus became the natural point of departure for these projects.

Once again bricolage became the methodology of choice. This method, extensively employed during architecture's postmodern period, where surface overshadowed depth and play replaced seriousness,[10] pertains even more to the on-screen design process. Computer generated objects are derived through manipulation and recombination, and lack specific physical referents." These characteristics allow the students to let loose their imaginations and explore abstract concepts. The following examples describe their main avenues of interpretation, and, despite the severe limitations due to outdated equipment and imperfect skills, offer novel and exciting ways to think about space, be it real or virtual.

STUDENT WORK

Materiality - Russell Miller

This library attempts to create a bridge between the physical and virtual worid. Visitors follow a corridor lined by rooms on either side as they progress from a traditional environment to an immense void. Along the way the rooms begin to deteriorate as the walls warp and disintegrate, while first the ceilings and then the floors dissolve. The collapse of these inner spaces parallels a gradual breakdown in the organization of information. Rooms at the beginning of the promenade are devoted to one subject category only, while later spaces contain information on a variety of topics, thus inviting visitors to browse at length through numerous fields of inquiry. The final space, an enormous void, takes its inspiration from Kahn's Exeter Library, thus translating a physical reality into the realm of cyberspace.

Multiplicity - Andy Sniderman

M.C. Escher's drawings, his fantastic interweaving of three-dimensional objects on a two-dimensional surface, served as the point of departure for this scheme. Translated into a virtual library, walls can be floors, floors can be ceilings, and stairs can come out of both. Suspended in space, the library consists of multiple volumes connected by numerous paths. It can be entered at any p oint with the click of a button. Once inside, the lack of a predetermined top or bottom allows visitors to reorient themselves through rotation. Each volume can thus be perceived and explored from multiple standpoints.

De/Reassemblage - Jim Wilson

This proposal focuses on the essential spaces of a library, only including those elements that guide the visitor in his/her explorations. A transparent canopy marks the entrance, and an elevator transports the visitor through an endless array of bookstacks towards a huge touch-sensitive screen. At this point, the library patron can select the information he/she needs. After his/her selection, the elevator, no longer necessary in its original function, transforms itself into a study carrel where information collects and awaits the patron.

Utility - Jessica Boughrum

In this project the virtual library has been reduced to a two-dimensional computer desktop. Conceived as a screen saver that appears on the monitor following prolonged inactivity at the terminal, the library contains a series of floating images that advertise the many possible links to information. These images beckon the viewer to enter the virtual world and investigate its content. In contrast to other projects, this library appears without any effort on the visitors part, a daily reminder that information is at his/her fingertips.

Fig. 4. Virtual Library - Russell Miller.

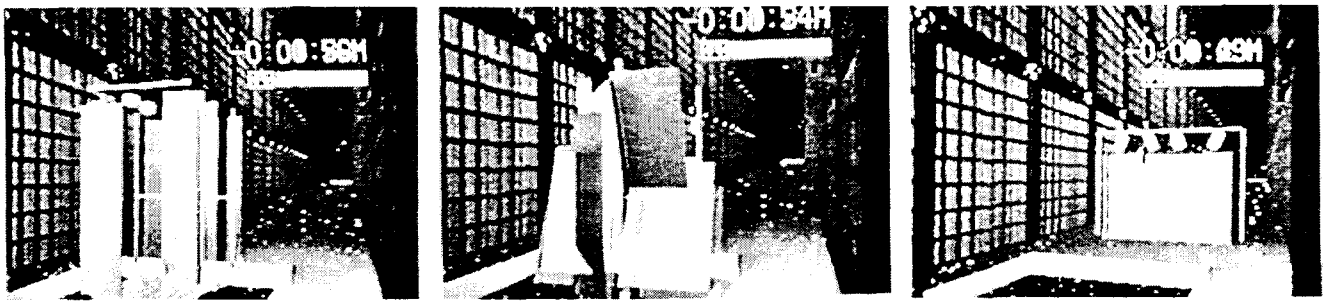

Fig. 5. Virtual Library - Jim Wilson.

CONCLUSION

Virtual/Reality: a ***design*** *proposal for a LIBRARY FOR THE FUTURE,* has provided students with the chance to explore simulation technology and use it. The students worked together in an atmosphere of improvisation, collaboration, and dialogue that allowed them to playfully experiment with virtual reality instead of treating it as a sophisticated modeling device. As the course progressed the students questioned traditional concepts of space and investigated new types of movement, thus extending the boundaries of the traditional design process. In addition, they shifted their focus from the exterior to the interior of the library, concentrating on the patron's experiences as he/she searches for knowledge. Unfortunately, time did not permit us to retranslate the many virtual discoveries into building projects that could be tested in a real physical setting. This studio, however, marks only the beginning of such an investigation.

NOTES

[1] William Mitchell, *City of Bits*, (Cambridge: *MIT* Press, 1995), p. 167.
[2] 3-D Visualization of Potsdamer Platz by Next Edit GmbH, (Summer 1996).
[3] Neil Postman, *Technopoly* (New York: Vintage, 1993). p. 20.
[4] William Mitchell, *City of Bits* (Cambridge: *MIT* Press, 1995), p. 172.
[5] Sherry Turkle, *Life on the Screen*, (New York: Simon & Schuster, 1995), p.48.
[6] Bruce Sterling, *The Virtual* ***City,*** Speech at Rice Design Alliance, March 2, 1994.
[7] James Morrow, *Moviemaking illustrated* (Rochelle Park, NJ: Hayden Book Co, 1973) and William Kuhns, *Behind the camera* (Dayton, OH: A. Pflaum, 1970) were used in part.
[8] John Worthington, "Planning the virtual library," *Architects' Journal*, v.200, n.7, (Aug.18, 1994.)
[9] Andrea Moed, "dinner at the home page restaurant," *metropolis,* (March 1996).
[10] Turkle, p. 44
[11] Ibid., p. 47