Making of OBELISK Mutimedia Archiving System

Jerzy Wojtowicz
University of British Columbia
jw@architecture.ubc.ca

Joost Houwen
University of British Columbia
jah@architecture.ubc.ca

Ali Shakarchi
University of British Columbia
ashakarc@architecture.ubc.ca

This paper gives an account of the development of a multimedia archiving system for architectural design education, reveals its framework, and sets the agenda for future versions of the project. The OBELISK is now released on CD-ROM for both Windows and Macintosh. The Shockwave version and more information can be found at http://www.architecture.ubc.ca/obelisk.

paradigm

The paradigm for the School of Architecture visual database project is an obelisk. These tapered monolithic pillars were originally erected in pairs at the entrances of ancient temples. The Egyptian obelisk was carved from a single piece of stone: the sides of the obelisk's shaft were covered with hieroglyphs recording significant events. An inscription on the base of Hatshepsut's obelisk at Karnak indicates that the work of extracting that particular monolith from the quarry took seven months.

Our digital Obelisk project took almost as long to build. On one hand our project can be seen as similar as it records significant events and provides public access to the visual archive. On the other hand it is not carved in stone and the user can redefine its final form. This visual database is a collection of both student and faculty material including design work, theses, special projects and illustrated papers. Its unique framework lies somewhere between collective design portfolio, studio pinup wall, and filing system.

With hundreds of images and files in its first edition, the OBELISK project is a significant move towards the creation of an interactive and customizable electronic archival system designed for the flexible retrieval of visually based academic and professional work. The interactive and customizable electronic format of this semi-annual publication keeps records of the School's academic activities, making them accessible to a growing public audience. The documentation found in the database is not intended to be an official representation of all aspects of the School, but is instead a casual collection of student and faculty work. Much of the material submitted for the 1997 edition was still in the form of conventional drawings and photos, which had to be digitized. However, a growing part of the School's material is being generated on computer.

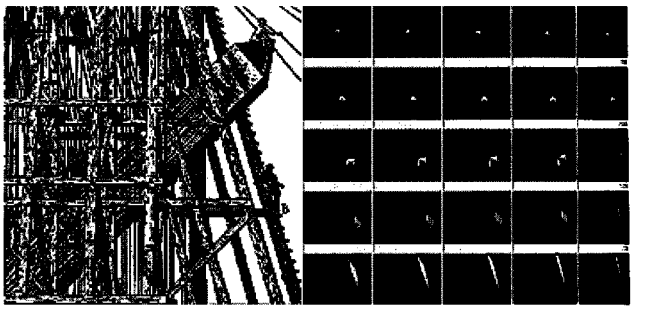


Figure 1 (left) *Fragment from Fontana's Transportatione dell' Obelisco, 1590.* (right) *Fragment of the opening screen of the OBELISK project, 1997.*

process

The production process of a multimedia archiving system is complex, involving numerous development stages, applications, formats and procedures. This process is well suited to collaborative effort and can be seen as somewhat analogous to the organizational processes evolved in the movie industry. Like in Hollywood, the making of a multimedia project begins with the planning and scripting of the production, as well as budgeting, and selecting the appropriate environment(s) for its delivery. The formalizing and editing of the media content, development of user interface, and the process of development and testing of the interactive archive constitute key production areas.

The three major components of the project: media, interface, and delivery are mutually dependent and their development is not sequential. Frequently, these represent parallel efforts, each contributing to the emergence of a quality publication. The heart of the project is the development of the delivery mechanism. This process integrated with the building of the database and media content is illustrated in *Figure 2.*

multimedia database

An Apple Power Macintosh with adequate storage and backup facilities was chosen as the primary development platform at the start of the

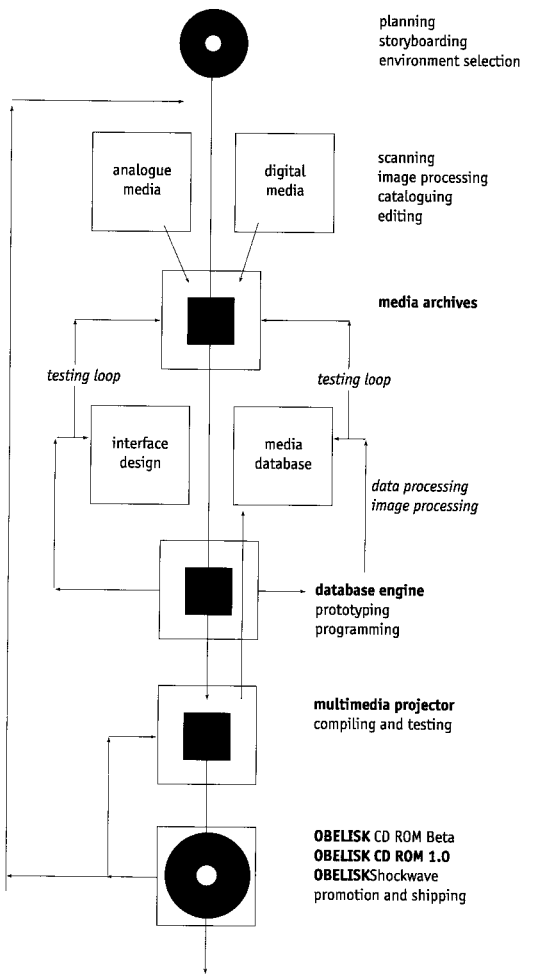


Figure 2 OBELISK Project Production Methodology

project, along with several other machines which were used for image processing and testing. Selecting the authoring software was more involved and we evaluated Apple Media Tool, Oracle Tools, mTropolis, Macromedia Authorware and Macromedia Director. While all authoring tools were found to have unique strengths and weaknesses, Director 5.0.1 was found to have the best combination of overall features for the OBELISK project.

The ideal multimedia authoring tool required for this project needed to not only have a large user base, but provide support both for database embedding and portability over the Internet. The second requirement was for a cross-platform relational database that could be easily built into the multimedia application. Thirdly, the OBELISK had to be delivered with minimal system requirements to allow for wider distribution.

The development of the interactive archive was done with Director version 5.0.1 integrated with the FileFlex database engine. This combination seemed well suited for producing the OBELISK in CD-ROM format. The FileFlex database engine uses high-performance data management algorithms to retrieve data from large size databases and the relational database capabilities only add a small additional memory requirement to the project. The engine is also compatible with the standard DBF database file format, which was also an asset (the DBF file format can be exported from most spreadsheet and database software packages). Integrating and calling the FileFlex database engine is accomplished through various Lingo (Director's scripting language) commands.

One of the strengths of Director is the availability of the Shockwave software, which allows Director projectors to be made accessible to virtually anyone through the use of World Wide Web browser plug-ins which run the multimedia program within the browser. Usually, these plug-ins can be freely downloaded over the Internet, from the software vendor, and are installed easily for most versions of browsers.

Further portability over the Internet and World Wide Web can be pursued by utilizing Director TCP/IP networking tools, developing Java enabled components, or extending the Shockwave version of the OBELISK to help deliver and retrieve data remotely in the new versions of the project.

Figure 3 shows the functionality of the OBELISK and its components in relation to the user. The process starts by selecting the search

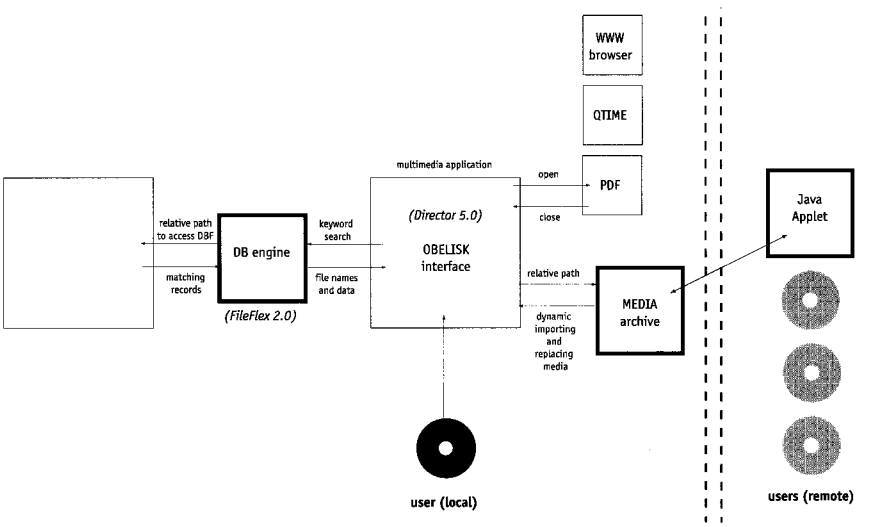


Figure 3 *Multimedia Visual Database Overview*

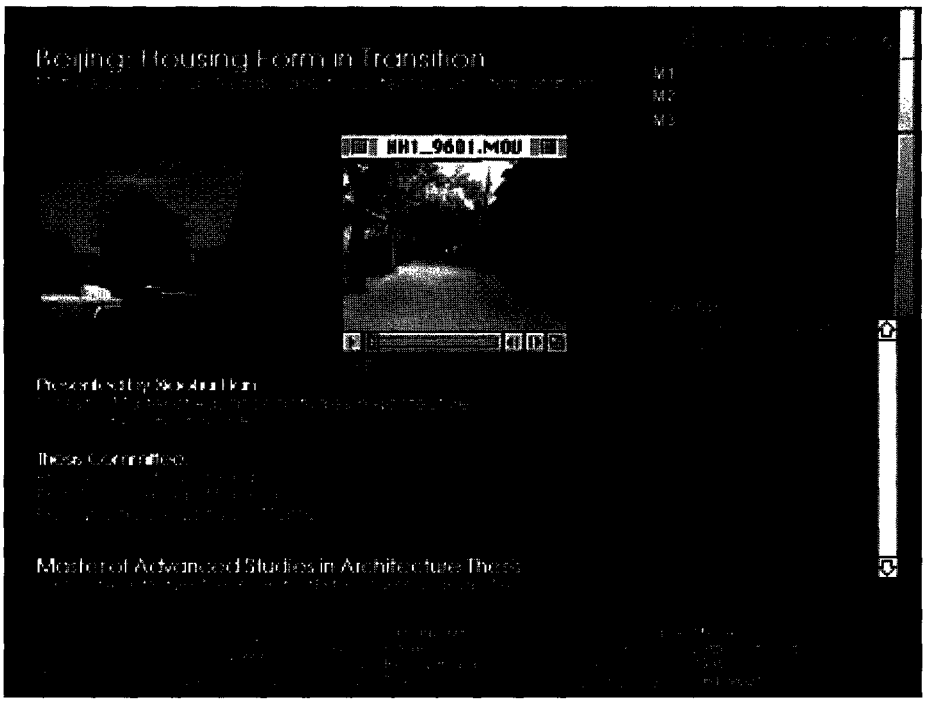
criteria (e.g. author & date) and then typing the keywords for those criteria in the appropriate text fields. Processing the keywords activates the database engine and starts the querying process from the database files. The engine then returns any matching results form the query; categorized by field name and stored into arrays within the application. A list of all records will then be displayed enabling the user to begin selecting and browsing the content found records as well as the related data.

Some media formats like Adobe Portable Document (PDF), HyperText Markup Language (HTML), and some movie files need to be viewed using external applications such as Adobe Acrobat Viewer, Netscape Navigator, or QuickTime MoviePlayer. These applications are started automatically when required. Also, some media records have more than one format associated with them such as a description of an image, movie, or a sound file. These additional formats are accessible when available through clickable display. *(see Figures 4, 5, and 6)*

OBELISK also has the capability of temporarily storing user-selected records while browsing. These records are stored internally and can be retrieved at any time. Often, the architectural drawings and renderings need to be browsed simultaneously to gain a better understanding of the spatial orders and functions (plan, elevation, section, site plan and three-dimensional model). For this reason the image comparison feature was added to the interface whereby the user can browse and resize up to five images at the same time *(see Figure 7)*. Also, it is possible to zoom and retrieve the large size formatted images at higher resolution into a separate resizable and scrollable window *(see Figure 8)* where details are clearer. This is particularly important for large-scale line drawings.

content and interface

The content of the OBELISK CD-ROM consists of the edited collection of both student and faculty material including design work, theses and papers. The media destined for the archive arrived, both in digital and analogue formats. Selection of images was casual. The design tutors short-listed a few projects from each of the School's studios; then the editors of OBELISK examined the quality of the images and selected those that would maintain an



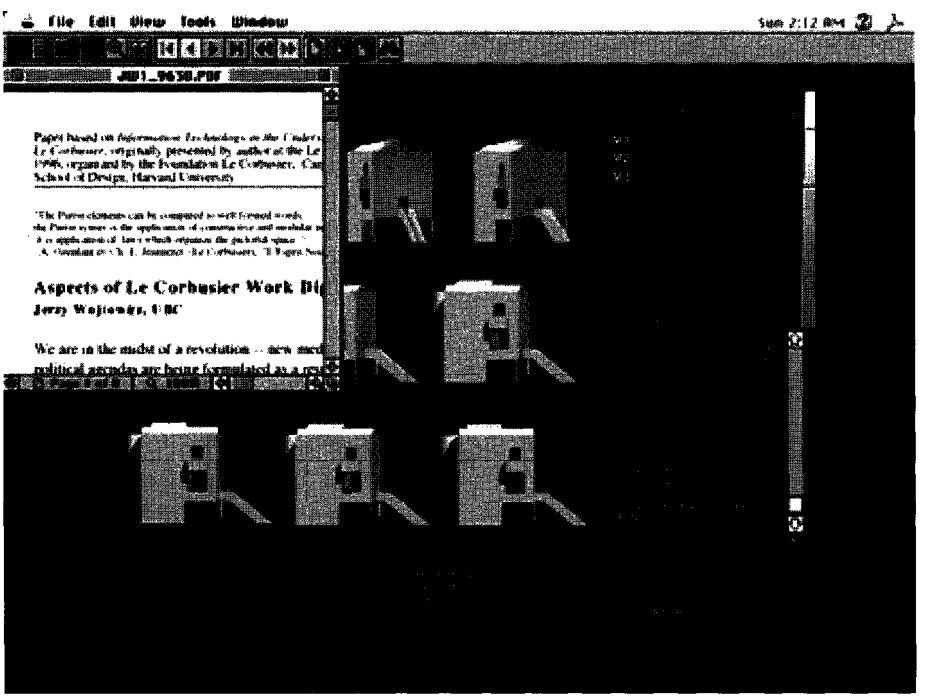
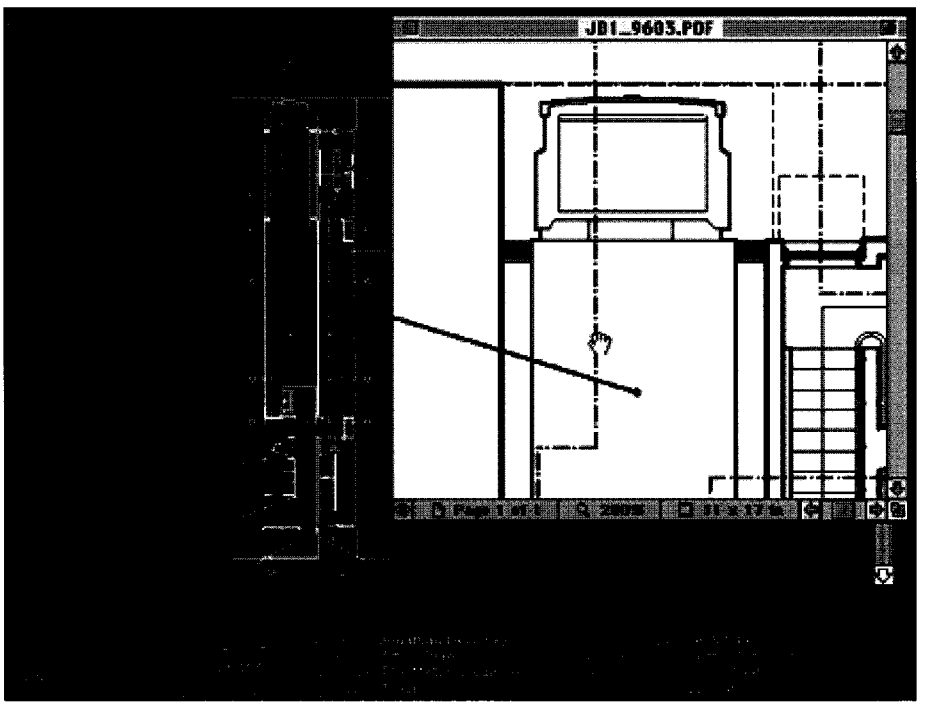


Figure 4 (top) *OBELISK running a movie obtained from a database record.*
Figure 5 (bottom) *OBELISK using Adobe Acrobat Reader to display a caption regarding this record.*



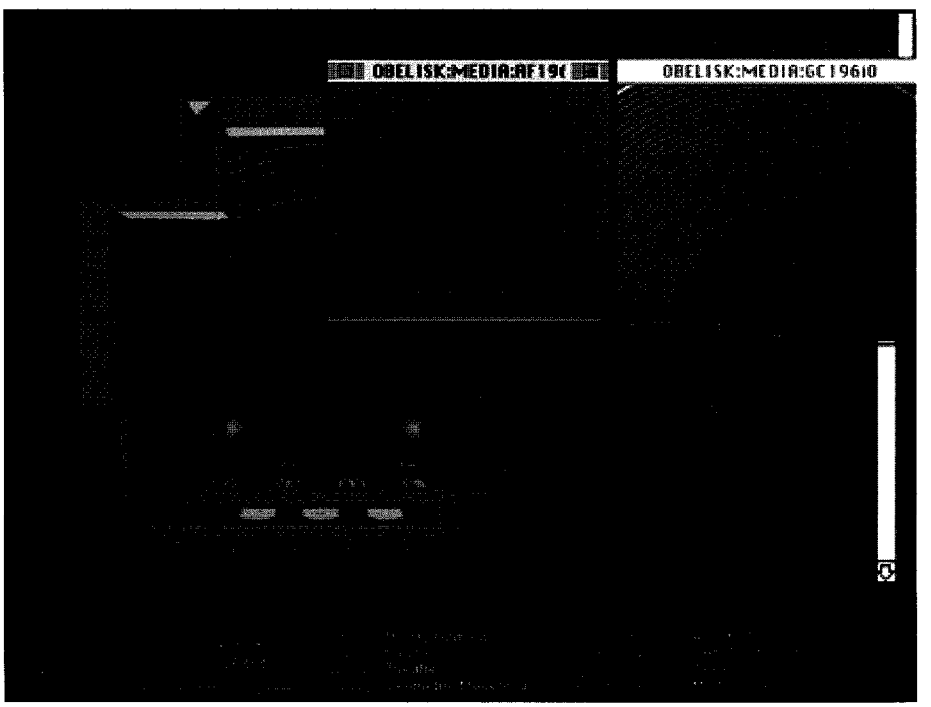
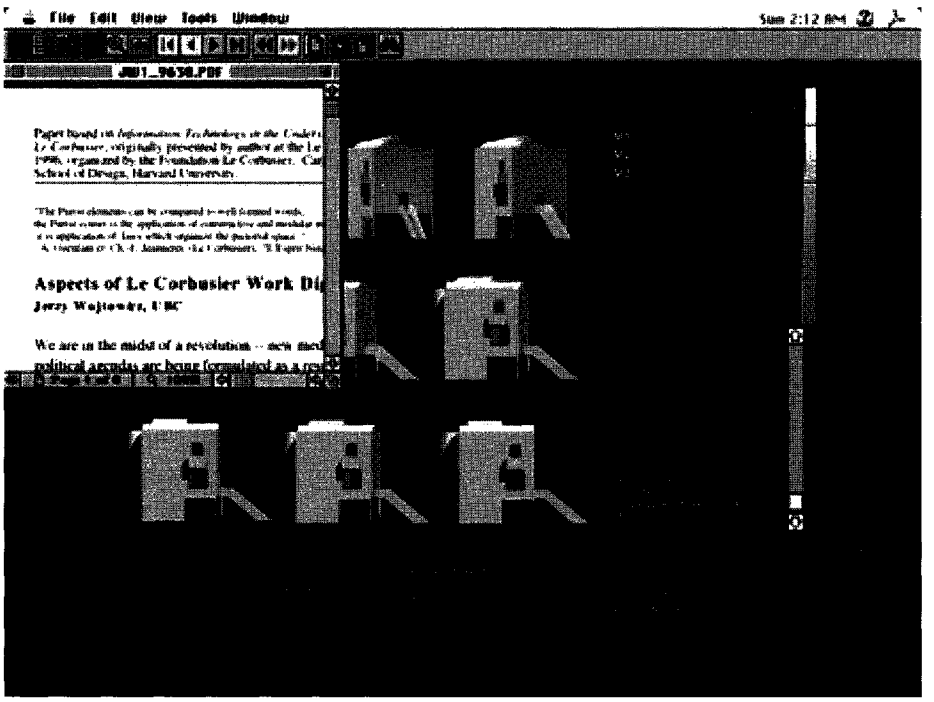


Figure 6 (top) *A large format drawing file is displayed using Adobe Acrobat Reader.*
Figure 7 (bottom) *Example view showing the comparison of two different views using resizable windows.*



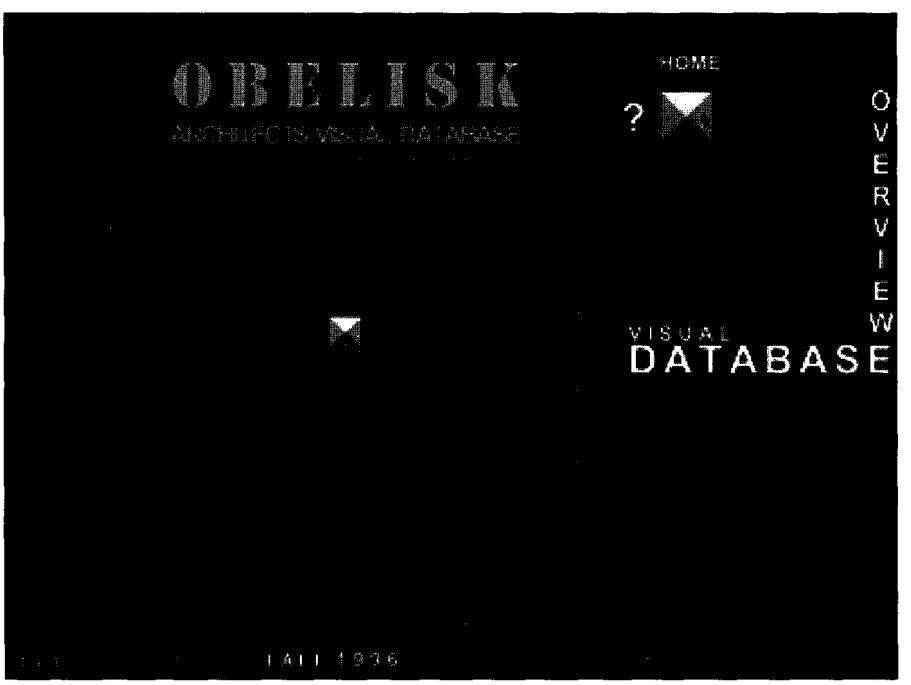


Figure 8 (top) *Example view showing use of full size zoom windows to display larger images.*
Figure 9 (bottom) *OBELISK startup screens. Insert (top right) shows the next screen, which provides the first options of* **Help, Home, Overview** *and* **Visual Database.**

acceptable level of readability in the computational environment.

However, the principal effort during and after this stage was devoted to the development of the multimedia database system and the interface. As efforts expanded on the gathering, digitizing and editing of media, ideas were developed for future implementations of a semi automated media submission process. In future versions, users will be expected to conform to specific sizes, formats and naming conventions using pre-formatted templates.

After initializing the startup screens *(Figure 9)* the user is given options to go to *Help, Visual Database* or the *Overview*, as guided by the obelisk icon. From the *Overview* screen *(Figure 10)* one can choose selected sequences of images and papers of faculty, graduate thesis and design studios. The *Overview* will be user definable in the future versions. This will allow for the presentation of not only the institutional view, but also the individual selections.

The main interface for the Visual Database section of the OBELISK is shown in *Figure 11, 12, and 13*. Before and after a search has been performed the user can enter search criteria to find specific database entries, as shown in *Figure 11 and Figure 12*. Once search results have been returned by the program, as shown in *Figure 13*, the user can select records from the list provided. Additional information about the entry, such as project or course descriptions, are made available to the user as well. Some of the current course descriptions include video annotations by the author. Again, future versions OBELISK

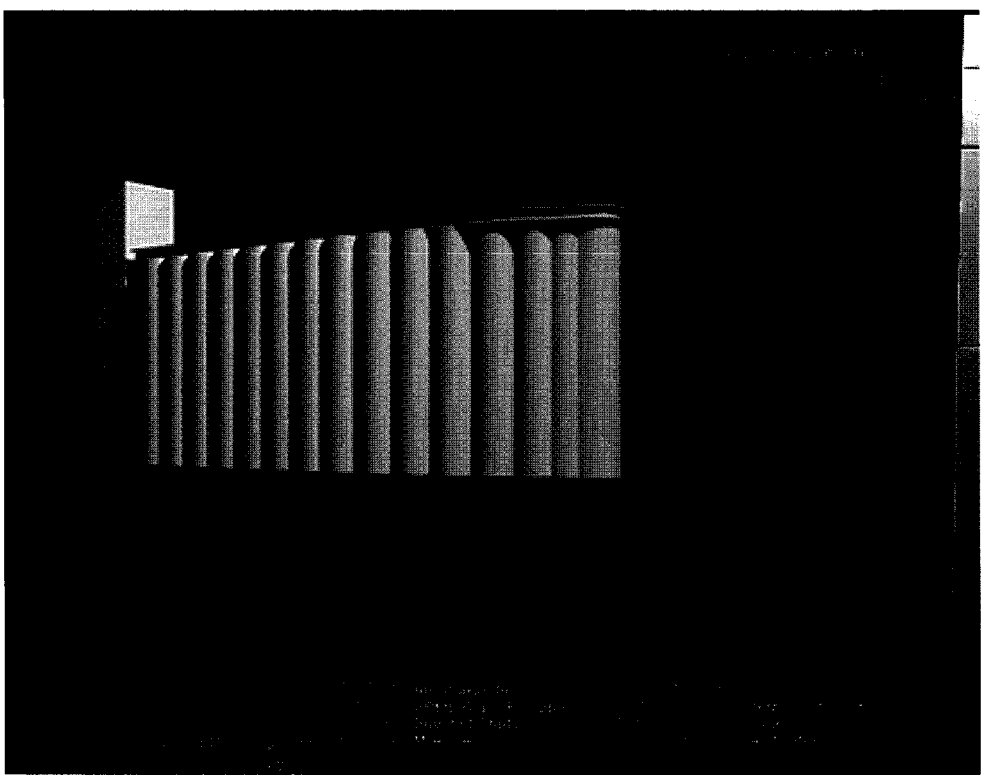
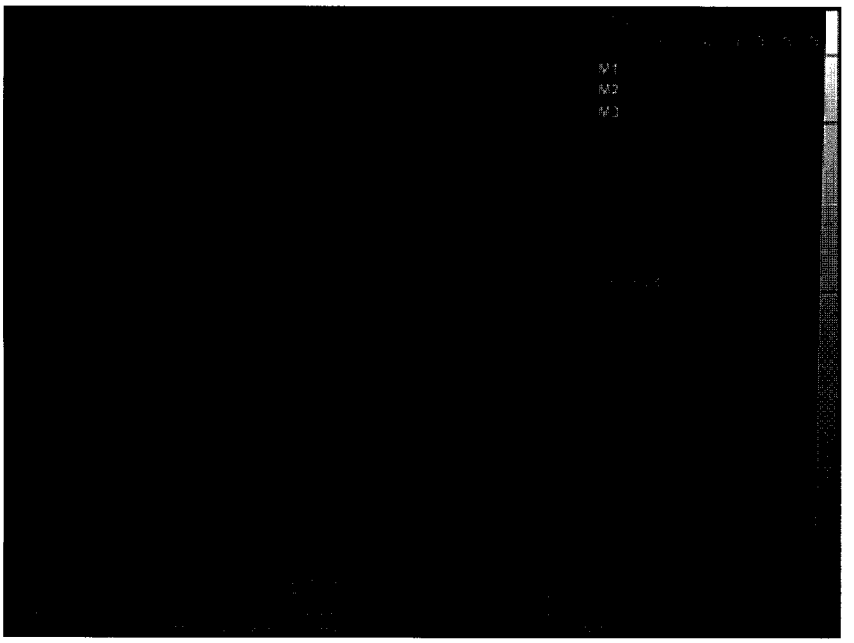


Figure 10 *The* **Overview** *section of OBELISK. the user can select different organizations such as by Faculty or by Masters of Architecture Design Studios. An automatic playing overview is also available.*



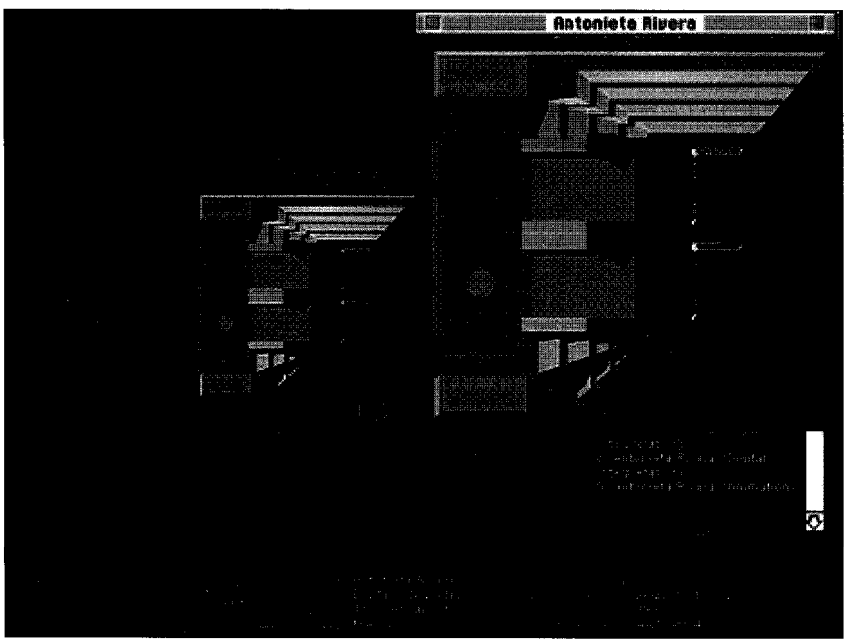


Figure 11 (top) *Visual Database interface screen before a search is initiated. Text search fields are provided for* **author, course, instructor, date**, *and others.* **M1, M2,** *and* **M3** *buttons provide comparison windows for examining media. Image* **load** *and* **save** *buttons can be seen at the lower left.*
Figure 12 (bottom) *Visual Database interface screen after a search is initiated. The found records are displayed as a scrollable list to the right, from which the user can select by clicking on the text. The images of the selected entries appear in the center of the screen, while the text data appears below. The zoom button has been activated (top left corner) and the resulting resizable zoom window is visible.*

will allow the user to customize these interfaces and layout to suit their preferences and usage.

future plans

In upcoming releases of the OBELISK project we intend to expand the current media database archive and interfaces in a number of ways. We are exploring several techniques for World Wide Web and Java based media submission by the students and faculty themselves into centralized "live" relational multimedia database, as well as allowing CD-ROM software to connect to it via the Internet. Also, we plan to add more interactivity and personalized comments from the authors using video and sound. There is also work planned to allow the end user of the CD-ROM or World Wide Web interface to become actively involved in the process by allowing them to modify it to their personal preferences and to create their own overviews.

Perhaps the content of the OBELISK project is not as significant as the format: the search and retrieval aspects of the database, which allow for the dynamic accessing of material by criteria the user is interested in. The strength of this project also lies in the inherent scalability of the software, such that the same technology can easily be used to create student portfolios, promotional material, or, large Architecture design and history archives. The further development of this project will see the full utilization and creation of many sophisticated tools, which will link to large archives of media, while remaining approachable to the user through interactivity and dynamic interfaces.

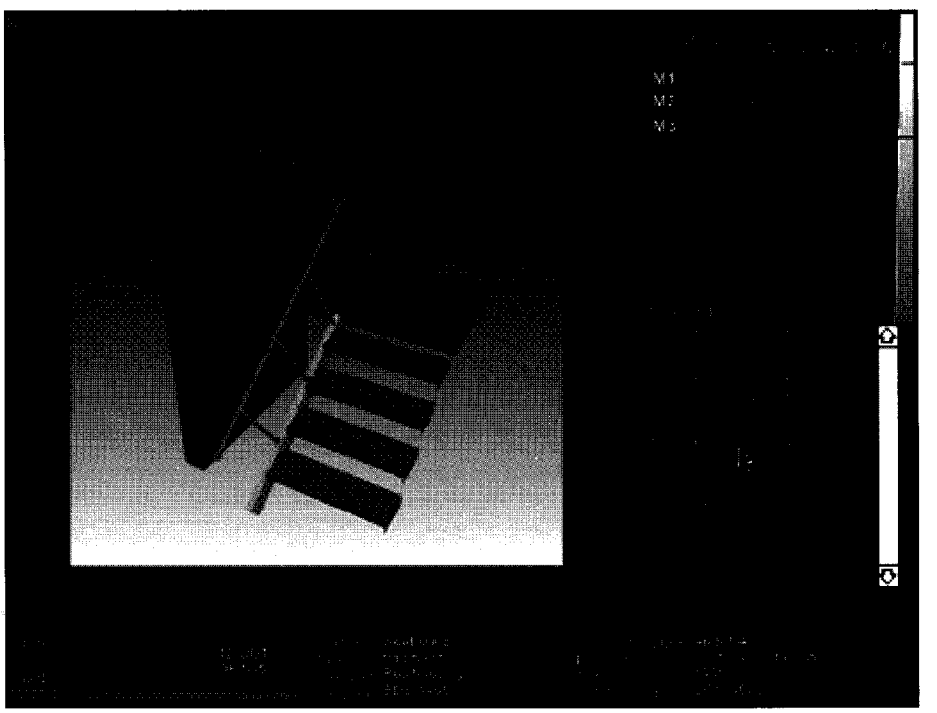


Figure 13 *Another view of an initiated search. Clickable indicators showing additional descriptions are seen in this example. (top right).*

computing tools used in the development of OBELISK

System Type	Operating System	Primary Use of Machine	Machine Utilization
Apple Power Mac 7500 (100MHZ)	Mac OS 7.5.5	Evaluation, Director, Review, Editing and Testing	50%
Apple Powe Mac 9500 (132 MHZ)	Mac OS 7.5.5	Evaluation, Director, Review, Editing and Testing	100%
Power Computing Power Center 150	Mac OS 7.5.5	Review, Editing, and Testing	25%
UBC Pro PC Pentium 166 MHZ	Win95 WinNT4.0	Director, and Testing	100%
UBC Pro PC 486DX2 Intel	Win 3.11	Director, and Testing	25%

Note: *These indicate primary machines used for the project, further testing was done using a variety of system configurations and operating systems through a "beta-testing" process. Also, a variety of scanning hardware was used to digitize media.*

Software	Company	Platform Used	Primary Use
Director 5.0.1	Macromedia	Mac/Win	Primary multimedia development tool
Photoshop 3.0.5 and 4.0	Adobe	Mac	Image processing/editing
Acrobat 3.0	Adobe	Mac/Win	Documentation, large CAD files and drawings
Freehand 6.0	Adobe	Mac	Images, cover, and booklet design
Pagemaker 6.0	Adobe	Mac	Images, cover, and booklet design
Navigator Gold 3.01	Netscape	Mac/Win	HTML authoring
BBEdit	Bare Bones Software	Mac	HTML and text editing
Works 3.0/4.0	Claris	Mac	Database manipulation
Excel 4.0/5.0	Microsoft	Mac/Win	Database editing/manipulation

Note: *This list represents a small sampling of some of the software packages used in development and production of this project.*