An Interactive Database (HizmO) for Reconstructing Lost Modernist Izmir:

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Abstract. The research project in progress in the School of Architecture at the Izmir Institute of Technology includes documentation and reconstruction (by 3D modeling in electronic media) of damaged and lost early modern buildings in the Izmir region. The research aims to analyze the differences between Izmir modern buildings and Universal Modern Style, and preserve information on architectural heritage for future generations. The project is at the phase of developing an interactive web-based historical database (HizmO) that includes data (information, images, technical drawings, VRML models) and visualization of the findings. This database aims to be a pioneer in Mediterranean Region for exhibition of relations between traditional architecture (especially Mediterranean locality) and modernism, and organization of a network and off-campus learning activity for Mediterranean architecture that serve as a guide for students, researchers and architects. This paper aims at introducing this research and discussing the application of the database "HizmO," its aims and potential effects on education in architectural history.

Keywords. E-learning, educational database, architectural history, VRML

Introduction

Courses in architectural history have aimed at offering perspectives on architectural form and spatial organization. Lectures have reading materials and technical drawings since the emergence of these courses, as well as by a wide variety of images presented according to the reproduction technology available at the time. The reading materials mostly provide perspectives on the historical, socio-cultural and technological context. The accompanying images may today include drawings, photographs, slides and models that provide visual information on color, material, texture and shape of characteristics indicative of interior and exterior features. Combining text with visual materials provides the background necessary to understand forms (Chan, Maves, Cruz-Neira, 1999). However, traditional applications of the two media fail to fully communicate characteristics of three-dimensional (3D) space and contexts of buildings. With advances in information technologies (IT), these issues may be overcome.

Educational databases are perhaps foremost among the new vehicles of architectural education generated by research in IT. By e-learning efforts and use of databases' help, students learn the material independently with the result that the instructor is able to utilize class time more effectively by devoting more of it to the qualitative guidance of students rather than to transmitting information (Stouffs, Venne, Sariyildiz, Tunçer, 2001). A sample study has been applied in our faculty in fall 2002. Dr. Deniz Sengel's architectural history courses were taught through a web-based lecture system. As students retrieved and perused lectures electronically, class time could be used for discussion and evaluation directly concentrating on visual material which also was available to students for independent retrieval

and study. This study demonstrated that contacts and intellectual exchange among students became strengthened as they were retrieved and engaged in the same exercise.

Importance of Historical Databases for Architectural Heritage

Cities are losing their local characteristics because destruction of traditional buildings. In the present historical moment, documentation of these buildings and architectural heritage gains unprecedented urgency for preservation of architectural information for future generations (Koshak, Gross, 1998). It has become equally important to share local architectural heritages world wide. Obviously these aims will be facilitated by the intermediary of digital databases postable on the internet.

ArchNet (http://www.archnet.org) is an example in point.

Characteristics of Izmir Modern Architecture

Project HizmO ventures into the uncharted ground of a specific aspect of local architecture and it studies early modernist buildings in Izmir. Early modernist architecture of Izmir is of course graspable firstly with reference to the general characteristics of modern architecture. The essential differences between the local Izmir version of modernism and the movement in the wide context may be enumerated as follows: "Functionality based design, orthogonal design of basic geometric forms, asymmetric design, built-up roofs, horizontal lines, balconies with breast wall that emphasize the continuity of horizontal lines, using especially only grey or white" (Eyüce 2001).

As in the rest of Mediterranean, climate is of utmost importance as a factor in design. The

International Style thus became modified with respect to its established stylistic traits because of these factors. The effects moreover of traditional Turkish architecture are readily traced in the modern examples of Izmir. The use of colored façades, curb roofs, shuttles, bay windows, plan types with traditional rectangular shaped entrance hall constitute the differences of modern architecture in Izmir from the International Style (see Fig. 4).

Implementation of the database "HizmO"

HizmO is the vehicle for exhibiting results of the above described research. The process design of the research and the database are indicated in Figure 1. Currently, the research is at a phase between "Implementation of Database" and the preparation of the "3D Visualization Shell".

Two important points for the design and development are notable: The first is the VRML (Virtual Reality Modeling Language) that has been selected as 3D visualization shell. According to the development of internet and visualization techniques, however, it is possible to employ XML or Open GL technologies for this interface in the
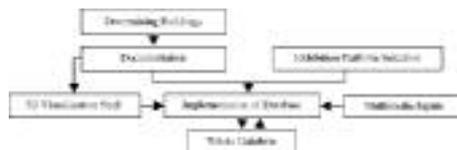

Figure 1.Process of the Database HizmO

future. The second, as evident in the same figure, with input from other researchers, the database may be developed by means of properties such as feed-back, extending, and enlarging.

The method of the preparation of HizmO is based on a style between providing "a fixed set of

data" and "information structure". Although current web-based databases tend to carry an interface with only iconic, textual, imaged, key-framed animated, video representations, in HizmO, we are investigating the opportunities for making interfaces with SQL database that includes VRML. 3D visualizations possess numerous benefits for web-based databases. It will be easier, for instance, as well as more effective to communicate buildings' aura to users with fewer multiple views of a given space; it is far easier to identify construction or lay-out conflicts with an on-line model than with a set of two-dimensional drawings describing complex building systems; the links between graphic information in VRML and construction specifications in HTML clearly bring to bear advantages on the web site as a communication medium (Campbell, 2000).

The structure of the entire database consists of four main specific information layer:

1. The Information Layer consists of basic information about buildings in plain text format.

2. The Material Library consists of 2D visual information about buildings; photographs and other representation that refer to further materials.

3. The 3D Visualisation Layer is composed of the 3D reconstruction of buildings by VRML.

4. The Search Engine

Figure 4.VRML model of "Villa in Karantina by Architect Necmettin Emre"

Figure 3.Temporary Interface of HizmO

Temporary web interface of HizmO and example VRML model from the database may be viewed in Figure 3 and Figure 4. The building in these figures is a typical Izmir modern building (architect Necmettin Emre's villa design in Karantina). This building was demolished and remaining data about it consist merely of a few photographs. These materials may prove insufficient to understand the building's aura, and VRML Models may be the only alternative for solving the problem.
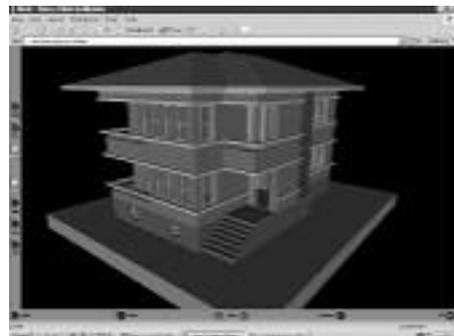
Conclusions and Projections for the Future

Local characteristics of Izmir modern buildings are investigated and the buildings with these characters are documented. Thus, HizmO has provided preservation of the information on Izmir's architectural heritage.

Once it is located on the Web, HizmO will constitute a pioneer and an example for this type of research about local architecture in the Mediterranean Region, and for the kind of database that exposes the interaction between nations, cultures and regions.

Furthermore, some of the aims of this study and the related database are to demonstrate and

discuss the potentials of e-learning systems by using web-based tools for architectural history courses. In spring semester of 2003, 3D visualisations of these buildings have been launched to use as course material in "Izmir Studies Courses" at IZTECH. As a result for this attempt, we have observed that students find these materials more user-friendly and easy to perceive than conventional ones, so they have generally used them instead of traditional ones. At this point, we can state that the database has constituted a search for alternative education methods in architectural education. It is seen that by 3D visualisations, perception of the spatial characteristics and materials of buildings are facilitated. By these results, we can claim that architectural history courses must be supported by 3D materials especially for lost historic buildings.

Consequently, with all the above-mentioned attributes, the HizmO project possesses potentials for e-learning architectural history and gaining Izmir architecture consciousness.

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