

# SAMPLE INTERACTIVE COURSEWARE DEVELOPMENT ON THE USE OF PROJECT EMPEROR-I VIDEODISCS

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Keywords: Interactive courseware, Interactive videodisc, Optical application, Interactive education, PROJECT EMPEROR-I.

Abstract: Applications of optical storage and interactive information technologies continue to be developed at an incredibly accelerating pace. In the past two years, technological improvements, implementation methodologies and cost effectiveness have continued to show great gains. Thus, the impact of new interactive optical technologies has increasingly been recognized by educators, researchers, librarians, and publishers alike.

This paper deals with the interactive courseware development employed by PROJECT EMPEROR-I videodiscs. The implications which such types of courseware is having on research, education and training will also be included.

## 1 INTRODUCTION

PROJECT EMPEROR-I: China's Treasure Revealed via Videodisc Technology" is funded by the Humanities Project in Libraries, US National Endowment for the Humanities. This project applies the most recent in videodisc technology to provide an interpretation of a difficult but most interesting humanities-related subject - a major historical and archaeological find of China's past, the First Emperor of China's terra-cotta figures of warriors and horses.

The characteristics of videodisc technology and the rationale behind the use of interactive videodisc technology for PROJECT EMPEROR-I has been widely presented since 1985, including at the International Online Meeting in December 1985 (Chen, 1985). This paper will concentrate on the more recent development in designing and developing interactive courseware using the videodiscs of the project, entitled "The First Emperor of China". In order to facilitate better appreciation of this topic, it is essential to expand briefly on what an interactive system is.

## An Interactive System

An interactive system is one in which both the user and the system enter into a simultaneous and reciprocal interchange. An excellent example of such a system is human conversation. Simultaneity and interruptability are the significant qualities. As in our mode of conversation, an interactive optical videodisc system allows a viewer to be an intimate part of the system and to be actively involved in both the viewing and learning processes. The coupling of the analog disc with a computer system, most commonly a micro-based computer system yields this effect.

The ability to easily access information on a videodisc, together with the availability of sophisticated authoring software, allows the development and/or composition of computer programs on a variety of courseware. Thus, a user has a convenient array of alternatives, via the selection from the supposedly user-friendly menu-driven screens on the system, to retrieve needed information, found both on the disc and/or in the computer.

## 2 COURSEWARE DEVELOPMENT

### A. "The First Emperor of China" videodiscs

Two double-sided 12" NTSC CAV videodiscs, <sup>秦始皇皇帝</sup> entitled, "The First Emperor of China: Qin Shi Huang Di, <sup>秦始皇皇帝</sup>" are the primary products of PROJECT EMPEROR-I. Musical interludes and 108,000 frames of visual images make up each disc. Also, recorded in both Chinese and English is one-full hour of narration and/or interviews.

In much the same format as an electronic book, the visual information is organized with reference to appropriate bilingual narrations, which are then classified into "chapters" each of which can be searched and retrieved just in the same way as any one frame of the visual images. While the videodiscs are not meant to be stand-alone discs, the first one does consist of a few stand-alone introductory programs, such as "The Introduction on the First Emperor of China," "The Great Wall," and "The Qin Terra-Cotta Museum of Warriors and Horses." In addition, the first disc also contains over 200 segments of motion video and over 4,000 still frame pictures. Any segment, chapter or program of the disc can be built in as part of a given courseware. (This will be expounded on in later discussion.)

An oral history presentation of videotaped interviews is located on the second double-sided disc. Segments from over 60 hours of videotapes consisting of interviews of the field's top experts were critically edited and reorganized into the format of questions asked of and responded to by each expert. To enhance quick retrieval, the answers provided by each expert to

the questions asked are also arranged in chapters. Again, any segment of these chapters can also be built in as part of a courseware.

#### B. Electronic Database

For the visual images which are most significant, a detailed database is being developed on a micro-based system. Each database record consists of twelve fields - such as disc side number, frame number, type of object, date of object, size of object, material of object, date of discovery, site where discovered, current location of object, information source, publication sources, and comments. Almost all fields are expected to be retrievable for both visual and textual information. This database supplements the developed courseware.

#### C. Coursesware

A hardware grant from the Digital Equipment Corporation has led to the employment of a DEC IVIS (Interactive Video Information System), together with the videodisc to create a variety of computer-assisted instructional courseware. In hopes of meeting the needs of users with different levels of expertise in either Chinese art history and/or archaeology, three levels of courseware are being planned. The levels are the intelligent laymen including school students, college students and researchers including graduate students in the field. For each level, computer assisted instructional lessons are being developed currently by using Videologic's authoring software, DIRECTOR.

Making selections on menus and sub-menus will be the method by which a system user will interactively choose options. In this manner the user will progress through each lesson or part of it. Simultaneously, the user will be able to select visual, audio and textual information in any desired combinations. The main menu is composed of the following alternatives:

- Topical - choices for various subject matters at different levels of sophistication. Sub-topical menus are also available (see Figures 1 and 2.)
- Exploration - choices to view three-dimensional pictures or to browse the slide collection. The browsing menu will enable the system user to view slides by going forward, backward, zooming in, zooming out, etc. (Figure 3)
- Reference - selection for checking in the "glossary" file or for viewing the "bibliography" file. Some items included in the bibliography can also be retrieved and viewed in full-text form.

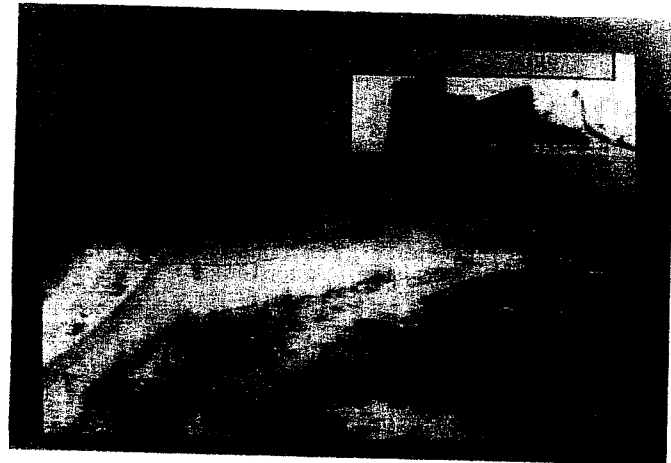


Figure 1. Main menu of a sample courseware showing topical selection

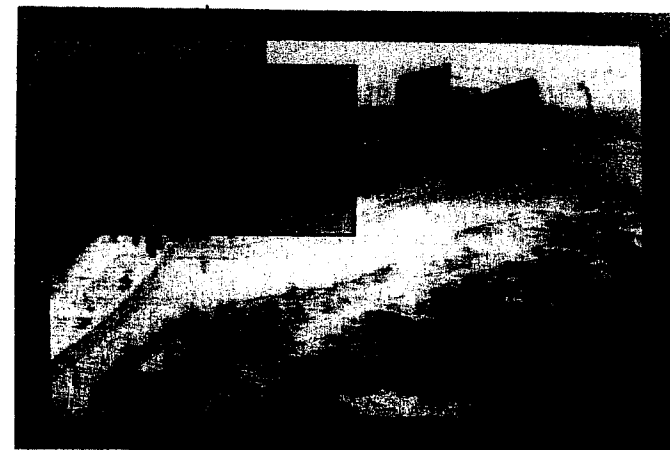


Figure 2. Sub-menu of topical menu when a user selects "Historical background ..."



Figure 3. Slide browsing menu of a sample courseware

- Announcements or messages - this enables the instructor and/or program supervisor to leave electronic messages to the system user(s).

The intent is to make these courseware also compatible with IBM and IBM-compatible micro-based systems. Aside from the use of the DIRECTOR authoring software, options are open for experimenting with various other kinds of authoring software as well, including the easy-to-use icon-oriented authoring software. For DEC's IVIS, in addition to DIRECTOR, PRODUCER is also being used to create a simple courseware for introductory materials as well.

### 3 CONCLUSION

Generally speaking, videodisc technology can be an universal tool for all of us and should have a very positive influence in the future of information provision and communications. PROJECT EMPEROR-I has demonstrated how it can provide information access insensitive of time limitation, distance, volume or complexity in a way not possible for us to contemplate before. Yet, in addition to the provision of

multi-media, multi-formatted and multi-dimensional, visual, audio, and textual information, just as importantly, PROJECT EMPEROR-I has revealed itself as a perfect research and development project. It spectacularly promotes the tremendously exciting opportunities which the interactive videodisc can provide in education, research and training. PROJECT EMPEROR-I has introduced a revolutionary interactive educational and learning tool. It is shown from the developed interactive micro-based courseware, that system users, no longer as passive learners, can learn about the subject at their own pace and as desired in an active interactive mode.

### 4 REFERENCE

Chen, Ching-chih, "Online information and interactive videodisc technology: Case presentation about PROJECT EMPEROR-I." Proceedings of the 9th International Online Meeting. London: Learned Information, 1985, pp. 159-161.