

## THE EUESPERIDES PROJECT: DESIGN AND EVALUATION OF A HYPERMEDIA PROGRAM FOR AN ARCHAEOLOGICAL EXHIBITION

Interactive multimedia applications can be a valuable tool for archaeologists and museum professionals. Their ability to combine images, text, sound, and video can assist the analysis and interpretation of finds; promote research, communication and publication of excavation data; facilitate archaeological teaching and training; enrich public presentations.

Recently multimedia interactives have started being used in museums and cultural organizations, opening up impressive opportunities and new routes. Their application affects the whole concept and perception of the role of the traditional museum, but also raises a number of important issues which need to be carefully examined. It is this critical assessment that is in many cases not being carried out in any depth, despite the popularity and spreading use of multimedia. As the multimedia craze and 'technolunacy' (the use of the technology as an end in itself) have started pervading museums, the need for careful appraisal and examination of the effect of these programs on visitors becomes imperative. For museums, with their usually tight budgets and increased public accountability – especially when funded by public authorities – it is even more important to evaluate the success of any multimedia venture.

This paper focuses on a specific multimedia project for the public presentation and interpretation of archaeology and the main issues related to its evaluation.

### 1. THE HYPERMEDIA PROGRAM

The Euesperides project was set up in Oxford in order to explore in practice some of the issues concerning the effectiveness of multimedia for exhibition interpretation. The program presents the history and archaeology of the classical Greek colony Euesperides in North Libya, based on material from the site stored at the Ashmolean Museum, Oxford. The application combines information from the excavation of the site (images from vases, coins, inscriptions, aerial photographs, etc.), with the historical background of the city. The Euesperides prototype was designed for a temporary exhibition organized by the Ashmolean Museum in collaboration with the Museum of Oxford in September-October 1995.

The Ashmolean museum organized the first systematic excavation of the site in Libya in the 1950s and today holds a small number of artefacts from this little-researched and relatively unknown site (VICKERS *et al.* 1994).

Presented alone, the objects from Euesperides would be an insufficient means for conveying to the general public coherent information about the social, political, and economic dimensions of life in the ancient city. The program (designed with Apple's HyperCard) aimed to offer contextual and interpretive information about the objects on display and also to demonstrate aspects of archaeological theory and practice (ECONOMOU 1993).

The Euesperides project is not a large scale initiative using sophisticated state-of-the-art equipment, but rather an experiment on what can be achieved with low-cost off-the-shelf software and hardware, of the type that most museums and educational institutions can afford today (ECONOMOU 1995, ECONOMOU 1996). In the Euesperides exhibition the program ran on an Apple Performa 6200 with a touchscreen, kindly loaned by MicroTouch Ltd.

The application includes a wealth of unpublished archaeological information to satisfy the interests of scholars and students from various disciplines, such as numismatics, epigraphy, literature, and vase painting. However, it was not intended as a specialized research resource, but was primarily addressed to the general audience of the museum exhibition. This affected design in a number of ways and dictated the use of an intuitive and attractive user interface. The use of the touchscreen proved a very popular feature, particularly to visitors unfamiliar with computers.

## 2. DESIGN AND STRUCTURE OF THE EUESPERIDES PROGRAM

The application consists of three main parts: Introduction, History, and Archaeology (Fig. 1). After the title screen and a short description of the program's aims, the "Main Options" screen offers the following main choices:

1. Where is Euesperides? (an "Introduction" to the geography, history, and re-discovery of the city).
2. What was Euesperides? (the "History" section of the program with information from the primary sources, e.g. pottery, inscriptions, ancient texts).
3. How did we find out about Euesperides? (the "Archaeology" part, which offers information about the excavation of the site and the finds).

A new button leading to a quiz appears after at least one of the previous parts has been explored:

4. What did you learn about Euesperides? ("Quiz"). This includes ten multiple choice questions which relate to the information presented in the program.

### 2.1 *History*

For this section the metaphor of an imaginary museum was used to organize the available information about the city's past. When the graphic

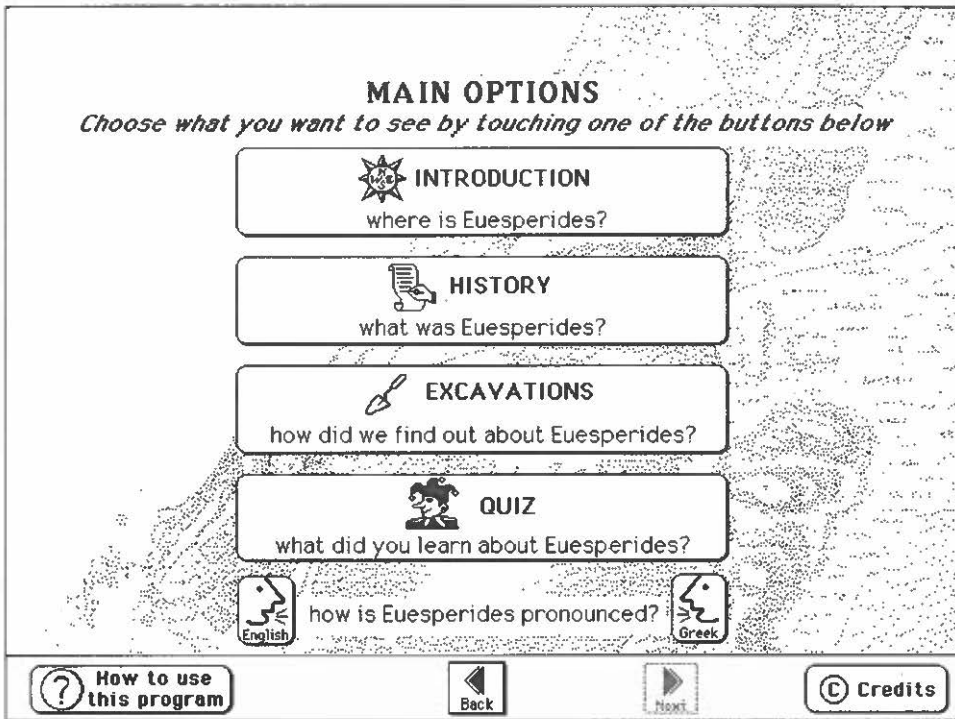


Fig. 1 – The “Main Options” screen of the program.

representation of the museum building is touched, its doors open up to a floorplan where the different galleries are active buttons leading to the relevant parts of the program.

The gallery of “Excavation Finds” is an explicit link to the other branch of the program, the “Excavations” section. It leads to a screen with the representation of a “museum case”, where small images of objects found during the excavation of the site are displayed. These can be selected to show additional information about the specific object.

## 2.2 Excavations

This part of the program uses mainly material from the Ashmolean excavations. A drawing of the siteplan is used as menu with flashing arrow buttons pointing to the parts of the plan where additional information is available. Archaeological methods and terms, like the grid system, trial trenches, and stratigraphy are explained in this section, while excavation photographs, drawings, and plans give an account of the archaeology of the

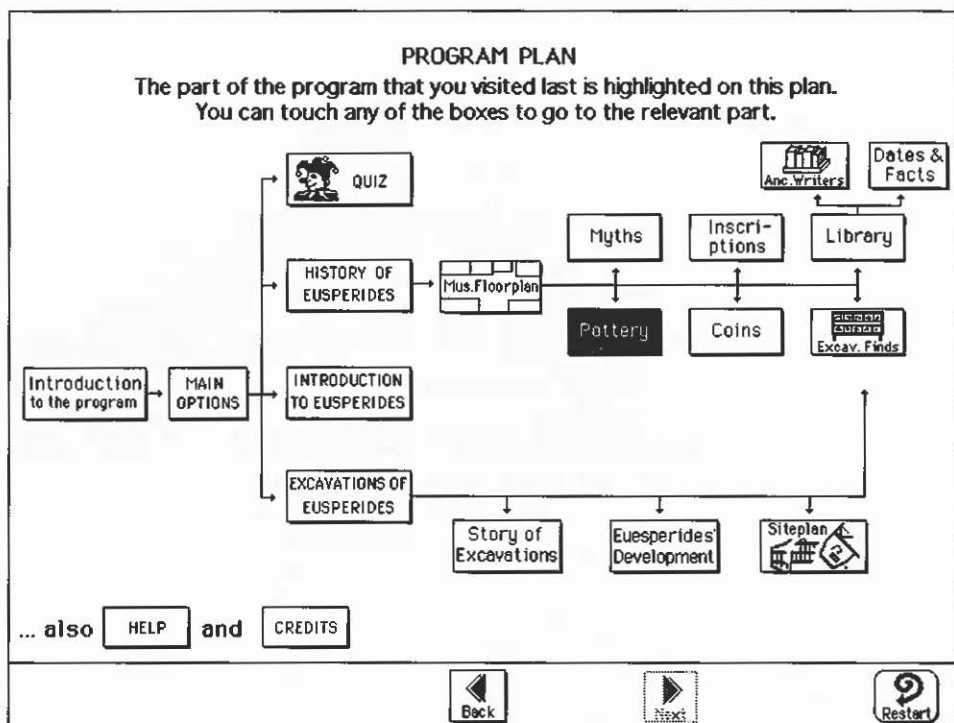


Fig. 2 – The “Program Plan” shows a diagram of the program’s general structure.

city. From the siteplan the user can also select to view some of the site finds, displayed in the “museum case” described above.

### 2.3 Program plan

The “Program Plan” is a diagram where the main parts of the program are represented graphically as rectangular boxes (Fig. 2). These are also active areas which can be touched to lead to the relevant part indicated by their name. The box representing the card viewed last, remains highlighted to offer a visual cue to the user and assist orientation. This part of the program can be accessed from all sections via a button titled “Where Am I?”.

### 2.4 Main buttons

All navigation buttons are consistently placed at the bottom of every screen. Apart from the buttons for “Next” and “Back” (the latter taking the users to the card visited previously, allowing them to retrace their steps), “Restart” leads back to the opening screen of the program. The “Help” button is a link to a screen with basic information on how to use the program.

### 3. FORMATIVE EVALUATION OF THE PROGRAM

At several stages through the design process formative evaluation was carried out with different groups of the targeted audience (schoolchildren, adults, students). Apart from pinpointing programming problems and “bugs”, evaluation also offered valuable information and feedback about the content, language, screen design, navigation, and the intuitiveness of the program’s interface. «A computer interactive that is prototyped and formatively tested will not necessarily be perfect, but it is guaranteed to be better than one that has not been tested at all» (RAPHLING 1994, p. 45).

For example, user input led to changes in the basic structure of the program. Previously, users had to go through the “Introduction to Euesperides”, before being asked to choose either “History” or “Excavations”. Testing, observing, and discussing with users led to the current structure where the “Main Options” screen includes all three branches available from the beginning of the program.

Formative evaluation highlighted also the need to change the title of certain features and buttons: “Written Sources” became “Ancient Writers” which is more understandable to younger users; the “Program Plan” button was given the more intuitive title “Where Am I?”; “Main Menu” became “Main Options” which does not bring up memories of restaurants or computers.

Observing 11-year-old schoolchildren showed that a lot of them have reading difficulties and that the pronunciation of Greek words is often a Herculean task. This led to the idea of including sound buttons throughout the program, which can be touched to give the pronunciation of difficult words.

Our experience from the Euesperides prototype reconfirmed one of the most important rules of interface design, the need for user input. One cannot overstress the importance of feedback from the users from the early design stages of any hypermedia program. Even handmade paper mock screens and testing with cheap and crude prototypes can offer valuable feedback and suggest changes before it is too late. In most cases even a brief survey with a small sample, if a large one can not be administered, will provide useful ideas and suggestions.

### 4. SUMMATIVE EVALUATION

After the completion of the program and when the application was running in the exhibition, summative evaluation was also carried out to explore the use of the Euesperides program by the visitors in the gallery. This was an important part of the project, which offered a wealth of information. As the data from the survey are still being analysed, only some initial observations will be outlined here.

A combination of methodologies was employed for the survey: interviewing, observations, visitor tracking, and computer logging of users' choices.

The aims of the evaluation were to examine how the program was being used, define the profile of the users, and assess how the program affected the atmosphere in the gallery and visitors' experience. Another objective was to investigate the common fear of many curators, that multimedia will replace the experience of viewing the real objects in the galleries. The study attempted to answer a number of questions:

- How does the program relate to the objects on display?
- What do people learn from the program? (a question which touches upon the issue of learning in museum and its definition)
- How does the program affect the way they view the gallery?
- Do visitors spend more time with the objects after using the application or do they get distracted and absorbed by the novelty of the technology?
- Does the program create a positive attitude towards archaeology and museums?
- What conditions can make the use of the program more effective?
- What is the effect of the program on different visitor groups?

The computer program was set up to record the path taken by all users. After the title screen and another screen explaining the program's aims, users were presented with four questions before proceeding to the "Main Options" screen; they were asked about their sex, age, familiarity with computers and with the subject matter of the exhibition. Multiple choice answers were provided in the form of active boxes, which had to be touched to be selected.

After three minutes of using the program, another screen would automatically appear asking users their opinion of the program. The questions were:

1. Did you find the Euesperides program easy to use? (The users had to touch one of the "very easy", "quite easy", or "not easy" boxes).
2. Did you find that the Euesperides program contained: "too much information", "not enough information", or "just the right amount of information"?
3. How would you best describe the program? (Users were asked to touch as many of the following boxes as they wanted: "useful only for children", "high-tech and modern", "confusing and complicated", "lively and exciting", "quite boring", "interesting and informative").

If the program was left unused for one minute, it was set up to restart and show the attracting loop. Apart from Saturdays which are the most busy days at the museum, the exhibition was not particularly crowded and visitors did not have to queue to use the interactive program. Therefore, observation showed that the computer log was in most cases differentiating the interaction of different individuals or groups.

Once the scripting has been set up, computer logging is an easy and inexpensive way of recording users' choices and the path they selected through the program. However, it offers no control over the validity of the data entered by the visitors in public galleries. Consequently, information recorded this way needs to be examined and interpreted with care. Fortunately, in this case there were ways of verifying the authenticity of the data, since the computer log was also backed up with other evaluation methods.

Additionally, visitors were tracked unobtrusively after entering the exhibition. Data collection sheets with the gallery layout and a checklist of specific behaviour categories were used together with a stopwatch to time and record the way visitors explored the exhibition and the computer program. Tracked visitors were approached at their exit for an interview.

Different questionnaires (colour-coded for convenience) were used for users and non-users of the computer program. Non-users were separated in two groups depending on the time they had spent in the exhibition: those who had visited the exhibition for more than three minutes were asked different questions from those who had spent less time in the gallery. This distinction was made after observing that due to the particularities and placement of this exhibition, a large number of visitors were using the gallery simply as a corridor on their way out. Apart from questions on demographics, this group of visitors were asked to rate several presentation and interpretation methods used in museums, including computer interactives. Another question checked if they had noticed the Euesperides program in the gallery and the reason for not using it.

Non-users who stayed in the exhibition longer than three minutes were asked the same questions, but also some additional ones about their visit and the way they perceived the subject of the exhibition.

This set of questions was also repeated in the users' questionnaire in order to allow a comparison to be drawn between the experience of users and non-users of the computer program. The questions related to the information presented on the panels and labels, the arrangement of objects, and the issues that the exhibition might have raised about archaeology and the discovery of the past. Users of the computer interactive were additionally asked a number of questions about the program. These were testing their opinion and perception of the program, as well as the ways it related to the rest of the exhibition and the objects surrounding the computer kiosk.

## 5. FIRST OBSERVATIONS FROM EVALUATION

As the analysis of the survey has not been completed yet, it would be premature to present here the full results. What can be said at this stage is that first impressions seem very positive. The evaluation indicated that the Euesperides interactive program was a useful and attractive supplement to

the exhibition. If an informal observation is any indication, the gallery attendants kept rushing to use the program whenever they had some free time...

The users of the computer program cover a very wide age range from approximately five to eighty-one. Additionally, the audience was very international, with more than fifteen countries recorded during the interviews.

There appears to be a difference in the visiting pattern between those who came directly to the temporary exhibition from outside and those who entered the exhibition at the end of their visit to the museum. The first had come to the museum specifically for the Euesperides exhibition, already motivated and interested in the subject, and spent more than three minutes in the gallery. Very few from this group (less than 10) chose not to use the computer program. Some of them gave as reason for not engaging with it, the fact that it was busy. It appears that the large majority of visitors interested in the exhibition were attracted by the program and used it.

The second group, which is the largest, consists of visitors who came across the exhibition unprepared at the end of their (often hour-long) visit to the museum. Several visitors from this group expressed their confusion and surprise when encountering unprepared the sudden change of subject from the permanent displays which explore the history of Oxford to the temporary exhibition about the excavation of an ancient Greek colony. Some of them also reported museum fatigue as their reason for not using the program or not staying longer in the exhibition. For a portion of this group of visitors, the Euesperides exhibition space functioned simply as a corridor on the way out. Most of them did not even notice the existence of the computer station which was situated in a corner, away from this "path to the exit".

Nevertheless, it was interesting to observe that the Euesperides interactive program did act as a strong attractor for a section of this group. Several visitors headed directly towards the computer when entering the gallery and a number of them stayed longer to look at the objects after using the program. Interviews and observation suggest that the novelty of the technology and the interactive character of the program attracted visitors with no particular interest in archaeology or the excavations of Euesperides. In some cases it appears that their curiosity was peaked and that the interaction with the program prompted them to view with greater interest the rest of the exhibition. Many users mentioned at the interviews that the program made things clearer, put them into perspective, and motivated them to go and look again at the objects.

An encouraging observation was that even a low-cost and relatively simple application, like the Euesperides prototype can be a versatile and powerful tool in a museum exhibition. Visitors were attracted and fascinated by it and the large majority stated that they enjoyed the program. A small number, mostly male visitors in their twenties, commended on the lack of colour, but seemed to still consider the application enjoyable.



Finally, another aspect of the summative evaluation focuses on long term memories from the exhibition and the program – an area that few visitor surveys have explored so far (MCMANUS 1993; STEVENSON 1992). During the interviews a large number of visitors volunteered information about their addresses. We plan to contact these visitors by mail several weeks after their visit to explore their impressions and memories from the exhibition.

## 6. TYPE OF INTERACTION

Most users found the program very easy or quite easy to use. There were several small programming problems which had to be ironed out during the first weeks. The two screens asking users to fill in questions about visitor profile and satisfaction from the program seemed to present difficulties for certain users. For statistical purposes and in order to encourage the correct input of data, these were programmed to accept only one answer in most questions and demanded that all questions were answered before letting users start or return to the program. It appears that several users did not realize this and got frustrated trying to use the program. A re-design of these screens with a clearer interface would be necessary to solve the problems.

Some visitors, especially older ones, often did not seem to notice the other navigation and control buttons at the bottom of the screen, apart from “Next” and “Back”. In most cases they chose a linear path of exploration by touching frequently the “Next” button. When “Next” was not available, this group seemed to get disorientated and confused.

Observation showed also that the existence of hypertext links (words underlined and in bold typeface in the Euesperides program) was not obvious to a large number of users. Colour coding of hypertext links might have made them more obvious.

The exhibition accommodated also a large number of schoolchildren, who according to the English National Curriculum have to be taught about ancient Greece between the age of 7 and 11. Interviews using the standardized questionnaires seemed inappropriate for this type of users. Instead, participating in the organized educational activities and observing the groups using the computer program provided useful input.

Younger users seemed to derive great enjoyment from the program. In most cases they were fascinated by the touchscreen and the technology, but could not read the information from the screen. Children under 10, and especially those with reading difficulties, often treated the program as a game. Some were observed touching mindlessly at the buttons without paying attention to the information. However, this type of visitors seemed to get much more out of the computer interactive, when they were accompanied by an adult who would read the text displayed on the screen and explain difficult parts. We plan to contact the teachers to find out their opinion about the effect of

the program on their students and their impressions from the exhibition.

## 7. CONCLUSIONS

The first results from the evaluation survey of the Euesperides prototype indicated that it was a successful and useful addition to the exhibition. It also highlighted problematic features and offered feedback for the adjustment of the prototype and the design of future applications. Further analysis will provide detailed information about the profile of the users, the type of interaction, and the relation of the program with the rest of the exhibits.

The application of relatively new and experimental technology often creates as many problems as it solves and first efforts may not be well received. Few institutions are willing to share unsuccessful experiences and unpredictable or negative results. Despite the urgent need for evaluation of multimedia applications, published reports of projects are unfortunately very limited in number, and most presentations focus only on positive outcomes.

Properly designed and conducted evaluation surveys can be a demanding, time-consuming, and daunting task, requiring specialized knowledge and expert advice, which many museums do not possess and cannot afford. However, evaluation of multimedia programs is necessary to help us understand better how this new, powerful technology works. The effort and resources expended in observation, interviews, and analysis should be seen as an investment which will increase understanding, enable the museum to improve its exhibitions, and offer valuable insights for future ventures.

Today, information technology and telecommunications are becoming increasingly important; our younger generations grow up in a media- and computer-rich world. In this setting, museums are expected to explore the particular features and novel possibilities of multimedia and to investigate and invent effective ways of applying them. Continuous testing with the users, consideration of the audience needs, and further research can help museums take full advantage and make optimal use of this medium.

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## ABSTRACT

This paper focuses on the Euesperides program, a hypermedia application for the public presentation and interpretation of archaeology and the main issues related to its design and evaluation.

The project was set up in Oxford in order to explore some of the questions concerning the effectiveness of multimedia for exhibition interpretation. The computer program presents the history and archaeology of the classical Greek colony Euesperides in North Libya. The application was designed for a temporary exhibition organized by the Ashmolean Museum, Oxford in autumn 1995. It aimed to offer contextual and interpretive information about the objects on display, and also to demonstrate aspects of archaeological theory and practice.

The paper discusses the structure of the program and the ways user input affected design choices. At several stages through the design process, formative evaluation was carried out with different groups of the targeted audience (schoolchildren, adults, students). This offered valuable feedback about the content, language, screen design, navigation, and user interface of the program.

Summative evaluation was also conducted to explore the use of the hypermedia program by the visitors in the gallery. The paper refers to the methodology used, outlines the questions that the survey addressed, and presents the first results.