

MARIA ROUSSOU

projects

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1. The design of cultural and educational Virtual Reality productions at the Foundation of the Hellenic World

From September 1998 to December 2002, Maria Roussou established and directed the Virtual Reality Department at the Foundation of the Hellenic World (FHW), a cultural heritage institution and museum in Athens, Greece. During her tenure at FHW, Maria was responsible for designing, establishing, and managing the Foundation's 3D Virtual Reality presence, both in Greece and internationally. Her role included the establishment of an innovative virtual reality center with high-end infrastructure (a CAVE-like system and an ImmersaDesk, the first and only projection-based immersive VR systems in Greece), and the creation of the educational and exhibition content presented in these exhibits. She oversaw the entire process in the development of the content, from the concept stage, the educational and museological design, the creative and artistic approach, to the scientific research and technical direction. The Virtual Reality exhibits have been open to the public since 1999 and are the most popular attraction of the museum, having received over 200000 visitors, most of which are children. In addition to the systems and content, Maria Roussou was responsible for the overall design of the visitor experience, from the way the Virtual Reality programs were presented to the public by the museum educators to the design of the multimedia and video-based information productions that served as pre-show /post-shows to complete the visitor's educational experience. In the following pages, the main virtual reality productions created at the FHW under Maria's design and direction are briefly presented. These productions are primarily interactive virtual reality programs targeting educational and cultural goals.

The Virtual Reality theaters "Kivotos" and "Magic Screen" as well as the programs described here can be experienced daily at "Hellenic Cosmos", the Foundation of the Hellenic World's cultural centre, located on 254 Pireos St. in Tavros, Athens, Greece. As visiting hours may vary, contact the cultural center beforehand or visit the website <http://www.hellenicosmos.gr>. Also see <http://www.virtualreality.gr/> and <http://www.fhw.gr/>.

The Temple of Zeus at Olympia

Possibly the most popular virtual reality programme with visitors at “Hellenic Cosmos”, the Foundation of the Hellenic World’s cultural centre, is the reconstruction of the temple of Zeus at Olympia. This impressive virtual reality experience includes an accurate reconstruction of the exterior and interior of the temple highlighting its splendour and enabling the visitor to experience the famous statue of Zeus, one of the Seven Wonders of the World, of which nothing remains today. The temple of Zeus, without doubt the most magnificent and important building of the site, sits in a central location of the sacred area of Olympia. The surrounding environment has also been reconstructed under Maria’s direction, while the accurate reconstruction of the remaining buildings is ongoing. The program can be experienced in a CAVE-like display but has also been presented at a number of different projection settings at various international events.



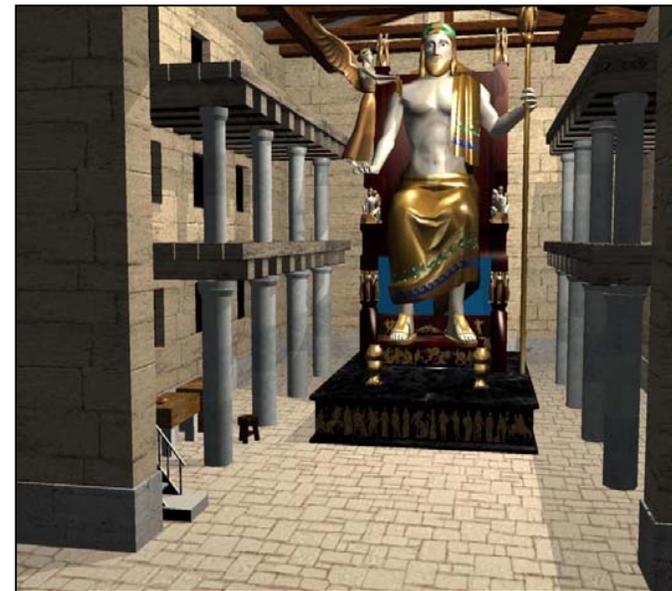
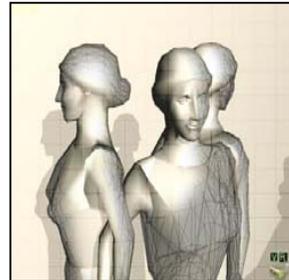
Olympic Pottery Puzzles

A highly interactive addition to the set of educational programs designed for the Foundation of the Hellenic World’s visitors is this fun game for students of all ages. By successfully connecting the pieces of broken pottery, students can bring to life (through 2D animation) the renderings depicted on the front of the reconstructed vases, images of athletes as they take part in Olympic games. The program offers the unique opportunity of learning about the process of restoration and facts about the Olympic games through an engaging learning-by-doing process.



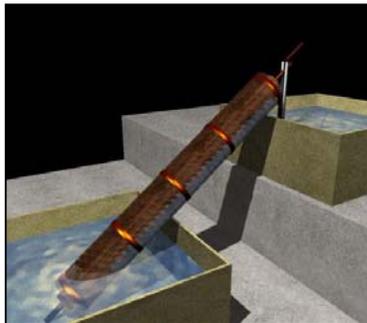
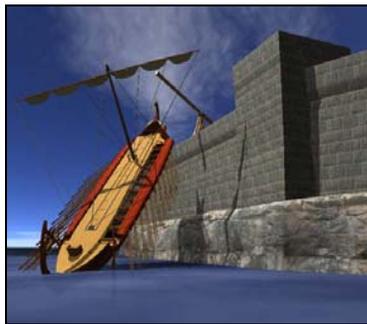
The laboratory of Phedias at Olympia

This interactive virtual experience situates visitors in the laboratory of the sculptor Phedias in ancient Olympia, amongst an accurate reconstruction of the famous statue of Zeus and the sculptor's tools, materials, and moulds used to construct it. Young visitors become the sculptor's helpers and actively participate in the creation of the huge statue, by using virtual tools to apply the necessary material onto the statue and add the finishing touches. Through this exciting activity a lot can be learnt about the tools, the material, the procedures and the creative process involved in the creation of one of the seven wonders of the ancient world, but also about ancient Olympia and the Olympic Games.



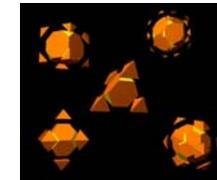
Magic Wardrobe

The magical worlds of Byzantine and Classical Greek costume form the basis of a series of educational virtual reality programmes related to an exhibition on Hellenic costume, developed at "Hellenic Cosmos". The programme brings to life the colourful world of Greek costume through exciting activity-based experiential educational worlds created for children.



EUREKA!!! Stories from Archimedes

The Virtual Reality department at FHW developed an interactive programme to complement the exhibition on ancient Greek mathematics, opened in 2003. The programme is based on one of the most important figures of ancient and medieval science, that of Archimedes. Through interactive virtual experiments, visitors of all ages can understand some of the most famous of Archimedes' inventions, such as the method for the measurement of the sphere volume, the hydrostatics' principle (our well-known EUREKA!), the invention of the water screw (a device used for lifting water for irrigation and drainage purposes), and the stories about the burning mirrors and the Iron Hand or Claw, both used to destroy roman ships.



A Journey through Ancient Miletus

The premiere programme in the “Kivotos” virtual reality theatre, “A Journey through Ancient Miletus”, travels visitors on a voyage of discovery to the city of Miletus as it was two thousand years ago. Participants can “walk” through or “fly over” the accurate three-dimensional reconstruction of the most important public buildings or “dive” into the harbour of ancient Miletus.



The Virtual Olive Oil Mill

Young visitors can learn about the olive oil production process of the past by actively interacting with a reconstructed olive oil press. Visitors can experience the traditional process of the mill that crushes olives and the press that produces the oil from olive pulp, from unique points of view. This virtual reality programme complemented the educational programme “Discovering Liquid Gold” concerning the olive tree and its role in the development of Mediterranean culture.



Ancient Priene

The Ionian city of Priene, a very good example of the Hellenistic-style architecture, is another ancient city planned to be developed into a virtual reality experience. The digital reconstruction of the public buildings of Priene as well as that of the landscape and houses is already underway.



2. Design & development of other educational, cultural, and recreational virtual worlds

The **NICE project (Narrative-based, Immersive, Constructionist/Collaborative Environments) 1996-1997**, is one of the first virtual learning environments for young children developed for the CAVE room-sized projection-based technology. Today it is considered one of the pioneering applications in the area of Virtual Reality and Education. In NICE, children from remote physical locations could collaborate in planting a virtual garden and thus learn the processes of a simple ecosystem. Multiple immersive projection systems were connected via the network allowing children and their teachers to share the same virtual world, interact and communicate by talking to each other. Maria Roussou led the design, development, and evaluation of the NICE project. The project was evaluated for its effectiveness with over 70 children, ages 6-10.

As a learning environment, NICE combines educational theories of constructivism, narrative development, and collaborative work. Maria Roussou's research work entitled **Issues in the Design and Evaluation of a Virtual Reality Learning Environment** and a number of other relevant project publications, have become important references in the field of Virtual Reality and Education, while the programme has received a number of awards and recognition. Moreover, a chapter of the book *Understanding Virtual Reality* by W. Sherman and A. Craig (Morgan Kaufmann Publishers 2003) has been dedicated to the NICE project.

In 1997, Maria Roussou presented an extensive virtual reality art production called *Mitologies*. **Mitologies** is an immersive virtual reality piece in which the participants engage in an experience of sensual inquiry into history, mythology, art, and music. *Mitologies*, inspired by medieval literary models, sends the virtual reality visitor on a mystic journey through a labyrinth full of dramatic reciprocities. Hallucinatory landscapes, bizarre embellishments, Wagnerian music, time pressure, and spatial discontinuities draw the observer into an "action" plot that begins with a word game: "Mitologies" derives from the ancient Greek word "mitos", the thread that Ariadne granted Theseus to help him find his way out of the Cretan labyrinth. The journey of discovery proceeds through a potentially endless labyrinth that confronts visitors with Durer's "Apocalypse", medieval curiosity rooms, Dante's "Inferno", and numerous references to mythological, artistic, and religious imagery. The complex network of metaphors and signs, culminating in a dizzying spiral, is designed to allow the visitor to experience the emotional essence of historical-political contexts. *Mitologies* was designed and developed by Maria Roussou and Hisham Bizri, in collaboration with Joseph Alexander, Alan Cruz, Tomoko Imai, Alan Millman, and Dave Pape. **In the permanent collection of the Ars Electronica CAVE, Linz, Austria.**



Eddie Riveron, 7 years old, is in the CAVE^(R), planting virtual vegetables and interacting with the avatar of another child in the NICE garden. 1997, Chicago. For more information: <http://www.evl.uic.edu/tile/NICE/>



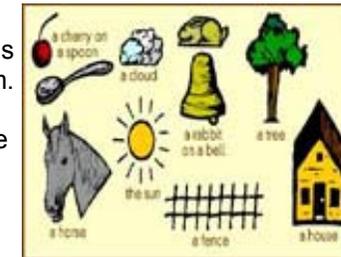
The three-dimensional model of the mosque of Cordoba in Spain, as experienced in *mitologies* (1997).

<http://www.evl.uic.edu/mitologies/>

3. Design & development of interactive installations, web, and multimedia projects



Maria Roussou collaborated with the New Media Initiatives department of the Walker Art Center in Minneapolis where she was a member of the Integrated Arts Information Access program team. Funded by a Minnesota state fund, the program involved the digitization of the Walker Art Center's and the Minneapolis Institute of Arts' collections. Her primary role as an educational technology specialist on the project was to design and create interactive art education material for students and teachers, based on the museums' collection. These on-line activities are included in the "playground" section of <http://www.artsconnected.org> while other digital productions she contributed to are accessible on the Walker Art Center's site at <http://www.walkerart.org/> (Gallery 9 section).



The File Room is an illustrated archive of cases of cultural censorship, conceived by artist Antonio Muntadas. As an interactive physical installation it was first presented to the public at the Chicago Cultural Center in the Summer of 1994 and later exhibited in numerous museums and art spaces worldwide. In parallel, it was accessible on the web, since the archive was one of the first art projects to use the Internet as its main expressive medium.

Maria Roussou designed and implemented the computer archive for the Web and customized it for the public art installation at the Chicago Cultural Center, which in 4 months time was visited by over 80,000 people. The project has received international acclaim and the archive is considered one of the pioneering works in the media arts.

<http://www.thefileroom.org/>



Maria Roussou has served as scientific advisor of the Fornos Center for Art & Technology and member of the program and organising committees of the yearly International festival on art & technology **Medi@terra**. Most notably, she was responsible for the Medi@terra 2000 Symposium and co-editor of the post-symposium publication.

[Medi@terra 2002: "New Platforms"](#) | [Medi@terra 2001: "De-Globalizing / Re-Globalizing"](#)

[Medi@terra 2000: "Neof\[tech\]nologisms"](#) | [Medi@terra 1999: "Pendulum"](#)



cleanse is a video and mixed media installation on visual literacy. The physical structure is composed of a circular concrete well. When looking down into the well through the body of water, the viewer can see an eye being cleansed. The viewers of **cleanse** are able to drop water in the well and participate in the cleansing process. The 'cleanse' installation was presented as part of *Virtual Spaces*, the Electronic Visualization Laboratory's exhibition for the annual meeting of the International Conference for the Electronic Arts (**ISEA '97**), held in September 1997 in Chicago. <http://www.evl.uic.edu/mariar/MFA/CLEANSE>



handprints – part of group exhibition *Untitled*, June 14– August 3, 1996, *Gallery 312, 312 N. May St., Chicago IL*

handprints (1996) is a work of interactive fiction that was developed for the web and exhibited as an installation at this Chicago gallery. The first few pages established the beginning of a narrative, which was then left to the visitors to continue. A second story, contributed by Paul Brenner, was added to handprints when it was exhibited at Gallery 312. The stories created resembled fairytales with no ending.



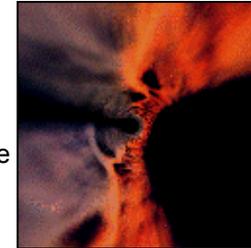
In 1994-1995, Maria Roussou contributed in the development of the virtual reality version of the **CitySpace** project, a virtual city environment built collaboratively by children, with the help of educators and media artists across the Internet. CitySpace was

presented in the CAVE® for the GII Testbed at [SuperComputing '95](#). This experiment used the [I-WAY](#) (Information Wide Area Year), a high performance network based on ATM technology.

<http://www.cityspace.org/>

In 1995, Maria Roussou participated in an electronic artists' collective led by Jim Barr to create the virtual reality **Psychotunnel in the Great Sandini Family Circus**, an entertaining virtual experience resembling a circus, with multiple tents leading to bizarre spaces and happenings.

The Circus was first exhibited in the CAVE® as part of EVE4 (Electronic Visualization Event IV) at Gallery 400, Chicago IL. It has also been shown at SIGGRAPH '96 and the [Ars Electronica Festival '96](#) in Linz, Austria.



Maria Roussou has considerable experience in the design and implementation of educational multimedia and hypermedia projects. Many of the applications she has worked on are still used or have been used in schools, presentations, and museum contexts, or as prototypes for the implementation of later systems. Some examples include:



Reality exhibits, as a form of pre-show.

The design and implementation of informational multimedia productions for kiosks, exhibitions, presentations, and CD-ROMs. Worth mentioning is the multimedia production “What’s behind the magic?” presented on touch-screen displays outside the VR theatres of the Foundation of the Hellenic World, which provides information to the public and answers questions concerning the technology, the programs, and the history of VR. An informative video including practical information also accompanies the Virtual

Maria Roussou was a member of the team that worked on documenting the scientific Virtual Reality applications presented at VROOM, an extensive installation of multiple immersive VR systems at SIGGRAPH 1994 showcasing the scientific achievements in Virtual Reality. VROOM received thousands of visitors, who, while waiting in line to experience the virtual reality applications, consulted the on-line interactive archive that was created using a customized version of the Mosaic browser and included text, images, sounds and movies.



The design of pre-rendered computer graphics productions and staging of cinematic-style digital experiences for events and conferences, such as the SIGGRAPH 2002 walkthrough of ancient Olympia presented on SGI’s large curved screen Reality Centre™, or similar presentations at COMDEX 2000 and the VizSummit. Maria Roussou has also participated with projects in events such as iGrid 2000 & 2002, ThinkQuest, and others, exploring the capabilities of high-speed networks in education and culture.



The **Mathopper** (1993), an interactive educational math program to teach the basics of the number line and multiplication concepts to 3rd graders. It was based on the public school education program T.I.M.S (Teaching Integrated Math and Science) and was developed on a Macintosh using SuperCard.

The **Urban Sherpa** (1994), a prototype multimedia architectural tour guide of Chicago intended for use as a kiosk or a portable “walk along” system. A physical handheld prototype was constructed, while the multimedia production included many images, drawings, video, and sound and was implemented on the Macintosh using an early version of Macromedia Director & Lingo.