

INTERACTIVE TECHNOLOGY TO EXPLORE MEDIEVAL ILLUMINATIONS

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Introduction

The main goal of the installation is to allow wide dissemination and awareness about color in Portuguese medieval illuminations, the theme of the project within which these components are being developed¹. This theme, as well as the historical context surrounding it, was already the object of some dissemination to non-scientific audiences, namely in several workshops where illuminations and color paints were produced using techniques similar to the original ones. The installation builds on this previous work.

The design and development process was carried out by a multidisciplinary team from areas including computer engineering, design, illustration, art history, history, chemistry and conservation sciences, with several iterations on the content and technology.

It also works as a trial for interaction experiments regarding innovative computational interfaces and how they can be developed and used in a cultural heritage setting.

The installation has three components that can work independently or as a full installation. The following sections describe each of these components and how they contribute to the overall experience.

Virtual Scriptorium

This component aims to provide an individual experience of producing an illumination, using a digital platform. It works as an extension of a real workshop on medieval



FIG.1 E 1A IMAGE CREATION. WORKSHOP OF MEDIEVAL ILLUMINATION



FIG.2 PAINT PRODUCTION. WORKSHOP OF MEDIEVAL ILLUMINATION



FIG.3 IMAGE CREATION. VIRTUAL SCRIPTORIUM



FIG.4 PAINT PRODUCTION. VIRTUAL SCRIPTORIUM

illumination which takes place regularly at the University, attracting participants with several ages and backgrounds (fig. 1). Their challenge is to reproduce an image from the «Book of Birds» or «Apocalypse of Lorvão», both romanesque manuscripts from the Monastery of Lorvão. The session includes the production of paints, based on medieval recipes (fig. 2).

Similarly to the workshop, this digital component aims to support the construction of an illumination from the «Book of Birds». Using a tablet PC and a pen instead of parchment and brushes, the user is guided through several steps in order to construct an illumination (fig. 3). Details such as the brush thickness, or the running down of the ink/paint in the pen brings a certain manual feeling to the application.

As in the real workshop, users can produce their own paints (fig. 4), through actions like grinding carefully a lapis-lazuli stone in order to have a proper pigment (as in the color blue), or mixing it with the binder.

The application contains also information concerning each illumination from the «Book of Birds» as well as the corresponding texts.

The goal is not to create an experience equivalent to a real workshop (differences, such the ones regarding touch and smells are obvious), but to provide a new approach to the production of an illumination, with its own specificities.

Being easy to set up, this application can be placed in cultural sites with broad audiences such as museums, public libraries and archives, helping to divulge the ancient art of illuminations through a playful and engaging experience.

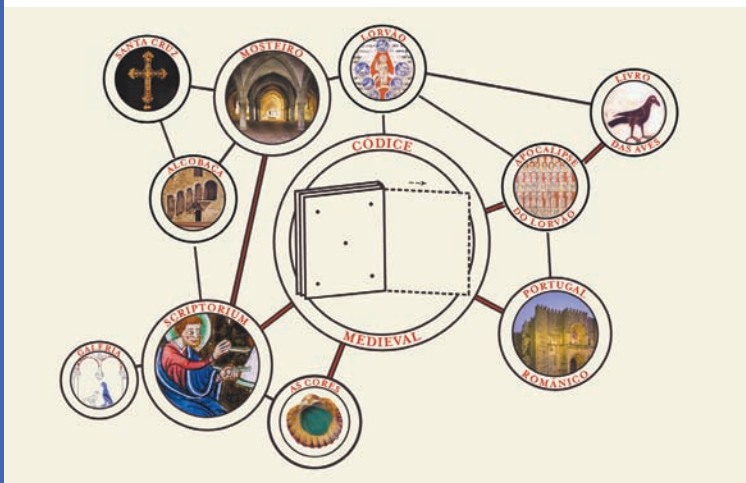


FIG.5 INITIAL DIAGRAM. INTERACTIVE PANEL



FIG.6 COLOR DIAGRAM. INTERACTIVE PANEL

Interactive Panel

The interactive panel provides an overview of color from a scientific, social, artistic and historical point of view. Special relevance is also given to the illuminated *codex* production process and to its historical context.

Users may explore several items such as «colors», «*scriptorium*», «*codex*» or «Romanesque Portugal», visible in a playful initial panel (inspired by medieval genealogical diagrams) (fig. 5). Some of those items will now be described.

Besides a brief scientific explanation of color, the item «colors» (fig. 6) explores the way paints of different colors were made in the Middle Ages. It also shows their applicability at that time and their possible social meaning(s).

The item «*codex*» also plays an important part, showing the enormous importance of the book at that time (in spite of its limited access), and displaying how the page layout of an illuminated manuscript was carefully designed regarding its different functions. It will display virtual versions of the codices «Book of Birds» and «Apocalypse of Lrvão» that the user may flip as in a real *codex*.

Since the monks were the agents of *codex* production at that time, the item «monastery» provides an important overview of the site where the workshops or *scriptoria* were placed, showing also a glimpse of a monk’s life at that time. In «*scriptorium*» the user can explore the instruments and materials used by the copyist or by the illuminator during the process of production of the *codex*, and also acknowledge the different tasks involved.

«Romanesque Portugal» (fig. 7) is an item in which the user can find concise information about the context of the Iberian Peninsula between the second half of the 12th century and the first of the 13rd century, namely the multicultural Portuguese society, its organization, and the art that was produced.

O NOBRE
Na monarquia guerreira da Reconquista, os nobres destacam-se nas actividades guerreiras e como detentores de terras. Nas cidades estavam representados nas cortes e tinham os mais altos cargos administrativos. As suas terras eram coutadas, ou seja, estavam isentas de pagamento de impostos.

O REI
Representante de Deus e chefe militar. Através de um corpo de funcionários aplica a justiça e administra o reino.

A DAMA
O papel da mulher nobre confinava-se muitas vezes aos ambientes domésticos. Contudo tinham papel de destaque como mediadoras nas tensões familiares e políticas. Exemplos há de nobres que estão ligadas à fundação de castelos e mosteiros. São conhecidas igualmente as suas ligações aos meios trovadorescos e à cultura letrada.

OS MONGES E AS MONJAS
As comunidades monásticas asseguravam as práticas religiosas e a cultura letrada, ocupando-se também de outras actividades tais como as agrícolas e metalúrgicas. Algumas prestavam ainda assistência hospitalar.

O BISPO E O ABADE
Dirigiam catedrais e mosteiros e participavam nas decisões do reino através do lugar que ocupavam nas cortes. Pertenciam a um grupo com vastos privilégios, estando isentos de obrigações militares e fiscais.

O CAMPONÊS
As actividades ligadas ao cultivo da terra estavam divididas pelos servos e homens-livres. As culturas dominantes eram os cereais e a vinha, sendo o trabalho dividido pelos membros do agregado familiar. Do produto da terra, os servos pagavam ao senhor tributos em géneros.

"A sociedade cristã do Norte peninsular, essencialmente rural e guerreira, contrastava com a civilização islâmica prevalecente no Sul, de feição mais urbana e comercial."
A grande maioria da população era formada por **cristãos**, embora os **árabes** e os **judeus** constituíssem duas importantes minorias. Vivendo sobre território árabe, temos ainda a considerar os **moçárabes** (cristãos portadores de cultura árabe) que chegavam a desempenhar cargos importantes ao longo deste período.

FIG.7 E 7A ROMANESQUE PORTUGAL. INTERACTIVE PANEL

The panel contains also a gallery of existing illuminations that were previously done with the tablet. All these items contain images largely based on illuminations analyzed within the research project.

This panel has the advantage of allowing access by multiple users at the same time and of establishing a connection with the tablet, relating practical and theoretical knowledge.

Augmented Book

The augmented book is the most innovative component of the installation in terms of interface device.

In opposition to the other two components, it provides a physical experience of the book while the digital content augments this experience. All of the electronics are hidden within the covers of the book, to make the book as similar to a real codex as possible (fig. 8).

While manipulating a real *codex* (a reproduction of a Portuguese medieval one) containing sensors that detect its orientation, a model of that same book is displayed, accompanied with information relating to its binding, that is, to the actions and elements that turn a gathering of folios into a book as a functional object.

For instance, as the user turns the book, facing its spine, visual and written information will be provided about the way quires were sewed. Information concerning the parchment and some relevant elements of the folios are also accessible through actions like opening the book or turning pages.

The book can detect when specific pages are open, enabling the display of virtual content related to that page. Within each page, it is also possible to navigate through the content performing swipe gestures with the hand in front of the book. All of



FIG.8 E 8A TESTING PROTOTYPE FOR THE AUGMENTED BOOK

these actions can be performed whether the book is standing on the table or is being held by the user.

Conclusions and future work

Prototype versions for the three components were developed, and testing with good results was achieved, specially the Virtual *Scriptorium* component. The development process is iterative and the different members of the team contribute at each iteration in the content, technology and desired user experience. Current and future work includes content development to add additional contextual information in the Interactive Panel and information about the book as an object in the Augmented Book component. Better integration of the three components regarding the software is also a relevant issue for future work. The ultimate goal is to deploy the complete installation in a museum, library or similar institution and for this preliminary contacts have been carried out. Extended user tests will be conducted to assess the experience that is proposed. ●