Experimenting with an Organic Metaphor and Hypervisual Links for the Interface of a Video Collection

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Abstract

In this paper we describe the prototype of an archive of short movies. The project proposes two original solutions for implementing the interface of this archive: an organic metaphor and a hypervisual navigation mechanism.

Keywords

User interfaces, metaphors, hypervideo, hyperlinks.

ACM Classification Keywords

H.5.1 Information interfaces and presentation: Multimedia information systems. H.5.2 Information interfaces and presentation: Graphical user interfaces; Interaction styles. H.5.4 Information interfaces and presentation: Hypertext/Hypermedia; Navigation.

General Terms

Design

Introduction

Over the past six decades, the human-computer interaction evolved from the use of the primordial input-output devices to the currently universally adopted graphical user interfaces [1, 8, 11, 13], and is

currently facing the challenge of the organic user interfaces [14]. Meanwhile, the reticular paradigm of the hypertext evolved from the prehistoric (with reference to the history of computing) vision by Bush [4], through Nelson's definition [9] and Engelbart's implementation [5], to Berners-Lee's creation of the world wide web and its diffusion over the net [2].

In this paper we introduce the prototype of a collection of short movies, whose interface is based on an organic metaphor, and which uses an original system of hypervisual navigation from a movie to another one.

A virtual museum of short movies

In this paper we propose a virtual collection of video clips, short movies, trailers and other kinds of short visual entertainment, which enables users access the archive through a non-standard graphical user interface (GUI) and to navigate through movies on the ground of associations between scenes.

When we say "non-standard" GUI, we mean that we were specifically required not to use common interactors such as menus, buttons and checklists, nor the hierarchical tree metaphor; nevertheless, the project was intended to run on ordinary displays on PCs in a public place.

Therefore, we decided to define a new spatial metaphor "to convey concepts and features" of our interface, according to the definition of metaphor provided by Apple's Human Interface Design Principles [1].

We have defined our approach as an organic user interface, because we have based it on the use of a virtualized body; in this sense, our use of the term

"organic" has nothing to do, for the time being, with the recent research on organic user interfaces, which try to exploit organic materials to implement new ways to interact with computers.

With reference to the navigation mechanisms, we have implemented links between couple of scenes of the movies, which allow hypertextual (hypervisual) navigation throughout the archive.

An interface at a snail's pace

The first step of our project has been the definition of a structure for our data. The requirements for our task were very basic: we had to provide easy access to movies whose unique identifying data were the director's name and one or more categories, still to be precisely defined.

Looking at the available collection of videos, we individuated four mutually exclusive categories: cinema, advertising, music, art.

On the ground of this macro-subdivision, we decided to create an interface to data with four access gates, one for each category; once chosen the category, the user is offered the set of artists who are represented within that specific category; once selected an artist, the user may choose among his/her works.

From this starting point, we designed a non-conventional homepage, entirely occupied by the silhouette of a snail (figure 1). No labels are present, only a few bubbles moving from the bottom to the top of the four tentacles suggest that those elements are the keys to navigate through the site. In fact, each tentacle gives access to one of the sub-collections, that

is the archive of one of the four categories; as soon as users hover over the top of the tentacle, a label appears to show which category is related to the tentacle and users are supposed to understand that they will activate a link by clicking.
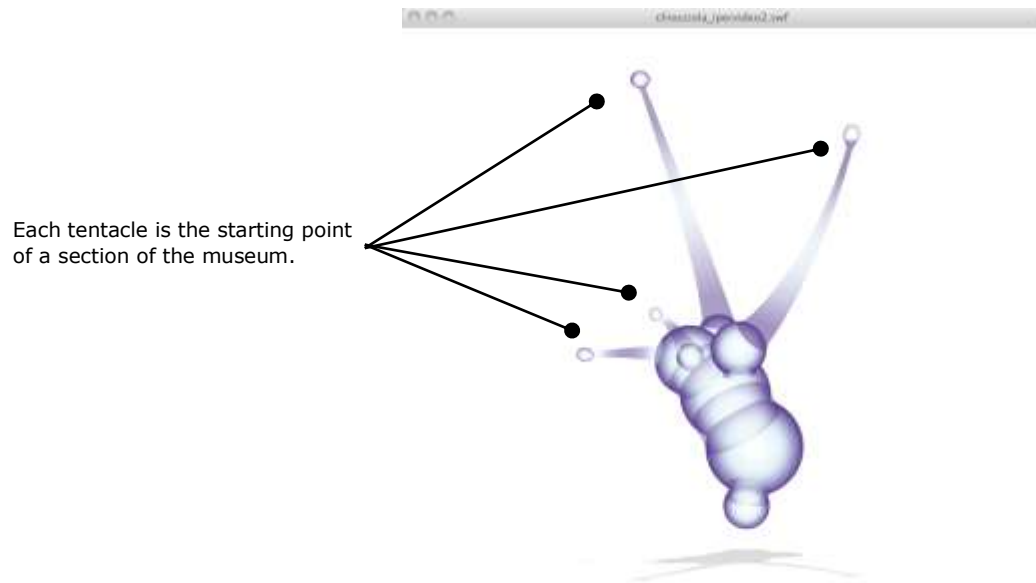

Each tentacle is the starting point of a section of the museum.

figure 1. The homepage of the museum.

The absence of persistent labels and evidences for links could be clearly interpreted as a lack of usability, since users could be disoriented by the interface and should be at least requested to learn and then remember its commands [6, 10]. Nevertheless, preliminary tests with users demonstrated that the learnability of the access method is acceptable (users do not need to be explicitly told how to interact and easily guess how to proceed)

and its memorability is high (users, who return to the virtual museum after a period of not using it, can easily remember how to deal with it). It should be taken into account that the site is devoted to entertainment and its users are expected to be more interested in getting lost in there, rather than in taking care of ordinary interaction efficiency principia. We have planned to perform extensive tests on a sample of potential users, which will give more weight to user satisfaction rather than efficacy and efficiency.

By clicking one of the tentacles, users are transported into the body of the snail, in a sort of *fantastic voyage* inspired by the famous Richard Fleischer's film; the new context is the internal tissue of the top of the antenna, where several spheres (or drops, or cells) represent the access points to the works of the artists represented in the archive (figure 2). The movement from the homepage to the internal level is animated, so that spheres seem to appear from the background and move toward the users, while the sound of a drop, followed by that of a cascade, emphasizes the sensation of voyaging through a body.

Even at this level, no evident written clues drive the choice of the artist, and users are invited to discover authors' names by moving the cursor over the bubbles, as they did at the homepage level.

Here, and elsewhere, the background hosts a backward link to the previous level: therefore, by clicking on the background of a tentacle users are moved back to the homepage, as well as by clicking the background of an author's home they are moved back to the category containing that artist; and by clicking on the background of a movie (as we shall see in the

following), they will be moved to the author's home (in some implementations of our prototype this link brings to the category, instead of to the author, for reasons that we are not going to discuss in detail here: we are currently testing both solutions with sample users).

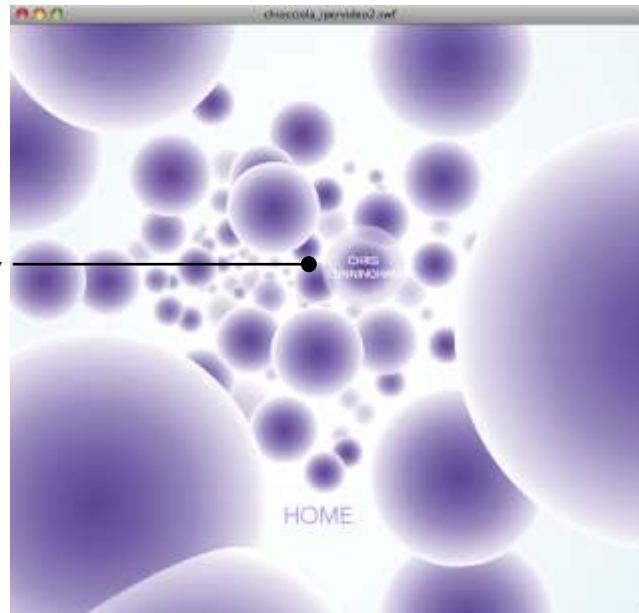Only blinking cells are active; when moving the pointer on a cell, the author's name appears.

figure 2. Entering the body of the snail: each cell can be the starting point of one author's video gallery.

Once picked a cell, a second step of the voyage is started, and users are transported into the cell whose elements – again spheres – are links to the works of that specific author (figure 3).

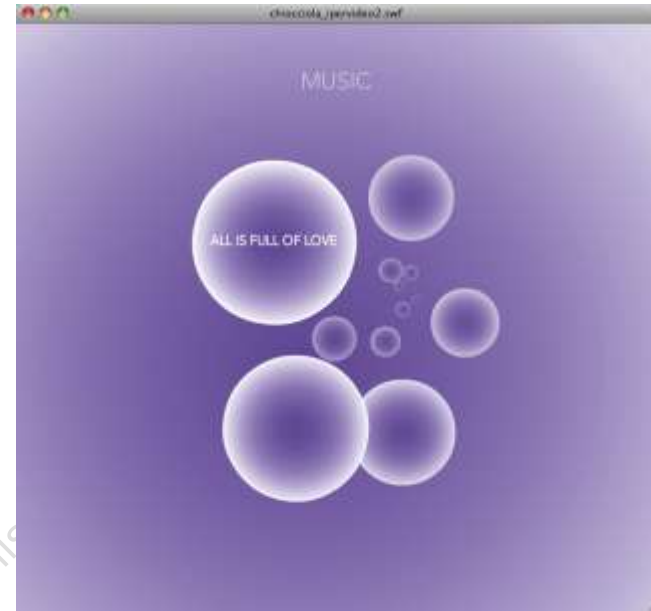The same hover and click mechanism is available here to finally start a video.

figure 3. Entering an author's gallery: each cell can be the starting point of a video made by that specific author; only blinking cells are active; when moving the pointer on a cell, the title appears.

Sequence-to-frame hypervisual links

Some attempts to implement hypervisual links do exist [3, 12], the most famous being certainly that implemented by YouTube, where each video can be accompanied by an ancillary set of links to other "related videos", "promoted videos", or other contributions from the same author of the current one: destination videos are represented by one of their initial frames, inserted into the page of the current video.

In our collection we did want to go beyond this generic one-to-many forward-star, to implement direct frame

to frame associational links (or sequence to frame, for greater convenience), that is to directly connect scenes belonging to different movies which we regarded as semantically related. Therefore, when our users start a movie, bubbles disappear and a minimalist structure appears on the centre of the display (figure 4), made of the video itself, its title and director's name on top, a navigation bar on bottom, with buttons to stop/play the video, skip to the beginning/end and forward/backward to sequences which host hypervisual links to other movies of the archive. When a link-sequence begins, a transparent purple layout is superimposed to the video for suggesting that the sequence hosts a hypervisual link; its nuance recalls the standard color used by browsers for unvisited links. Meanwhile, on the right of the purple sequence a picture appears, which is (a slice of) the starting frame of the destination video for the current link: users can follow the link by clicking either on the current video or on the destination frame on the right.
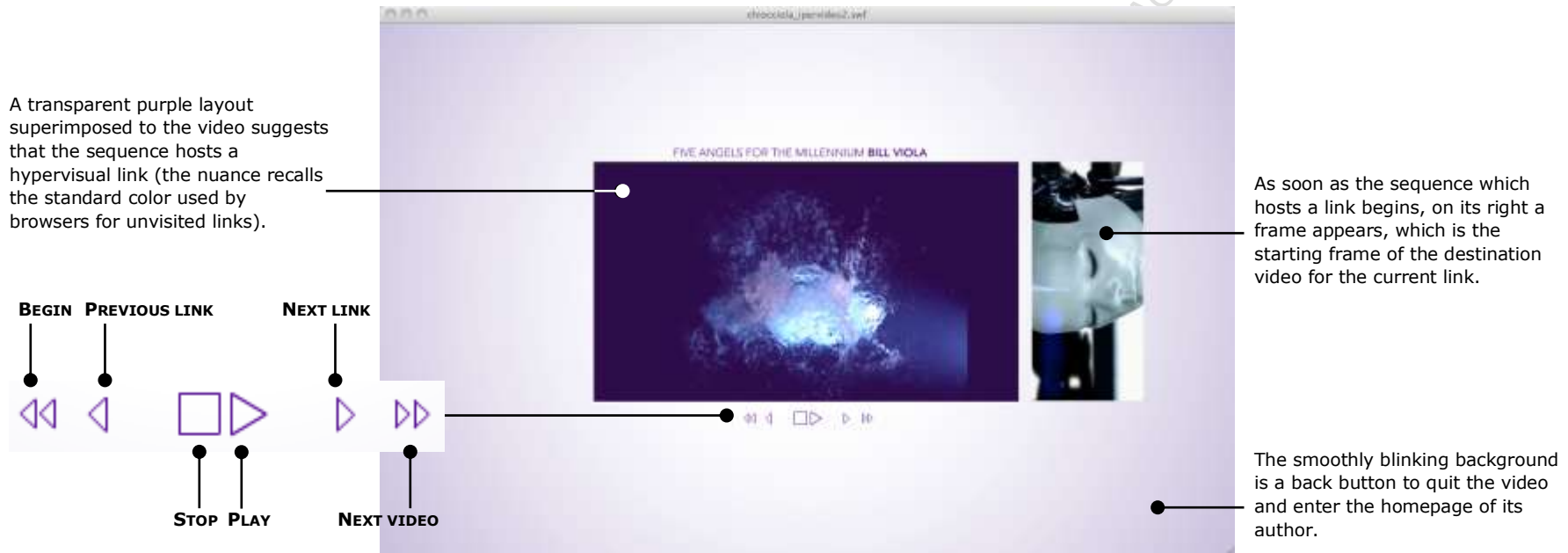
A transparent purple layout superimposed to the video suggests that the sequence hosts a hypervisual link (the nuance recalls the standard color used by browsers for unvisited links).

BEGIN   PREVIOUS LINK   NEXT LINK

STOP PLAY   NEXT VIDEO

As soon as the sequence which hosts a link begins, on its right a frame appears, which is the starting frame of the destination video for the current link.

The smoothly blinking background is a back button to quit the video and enter the homepage of its author.

FIVE ANGELS FOR THE MILLENNIUM BILL VIOLA

Figure 4. Navigating through the hypervisual structure: the use of colors and frames suggests that a hypervisual link is active. Users can follow it by clicking either on the current video (larger image) or on a slice of the destination frame (on the right).

As usual, the background acts as a back button and provides transversal navigation through the body of the snail, since it redirects to the author's home, which could belong to a tentacle different from that originally visited by the user.

As we said above, the semantics of this back button is controversial and is going to be tested, in order to minimize problems, which we have experienced as rather frequent with such kind of pointers [7].

Implementation and further developments

We have implemented several prototypes of the virtual museum using Flash as an environment for rapid prototyping. In the meanwhile, we have built an experimental ontology of multimedia objects in OWL using the Protégé Ontology Editor developed by the Stanford Center for Biomedical Informatics Research (http://protege.stanford.edu/). In this ontology we describe multimedia objects, such as podcasts or videos, till the granularity of the "fragment", so that we can address explicitly sequences and even their initial frames. Our current challenge is to automatically set up an application able to implement metaphors and hypervisual links, as described in this paper, by starting from the OWL ontology.

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