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# Several models of interactivity in the CD-ROM *Joan Miró. The color of dreams*

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There are two main ways interactive programs can transmit information. One way is to provide the fastest, most direct, and most operational access to it as possible. The other is to use the interactive nature proper to transmit the contents in an original way; this is usually called uncovered interaction. Both of these forms co-exist in the CD-ROM entitled *Joan Miró. El color dels somnis* ("The color of dreams").

## 1. Introduction

One of the usual activities of the Institut Universitari de l'Audiovisual of Pompeu Fabra University as part of its research and teaching program is the production of interactive multimedia products. The second product of the IUA's multimedia laboratory, "*Joan Miró. El color dels somnis*" promotes culture by means of one of the new media available, an approach that was begun with the CD-ROM on Catalan poetry, "*Dotze sentits*" ('Twelve senses'). The new CD-ROM was produced in conjunction with the Fundació Joan Miró in Barcelona, the leading authority on the life and work of the Catalan painter, and the European Union's Media Program.

## 2. The interactive medium and CD-ROMs of art

One of the most interesting aspects of the revolution of digital technology in the audiovisual field in the development of interactive materials, as they represent a new form of expression in which the user's actions are full of meaning. To paraphrase Trip Hawkins, cited by Korolenko (1997:46), if audio is the media of listening and video is the media of seeing, then multimedia is the media of doing (1).

This new medium has introduced new ways to access information and culture in particular. One of the first fields in which interactive materials have been developed is in the dissemination of visual arts, as practically all museums, artists, and schools or movements of art have at least one CD-ROM. Within this wide range of specialized products several different typologies can be differentiated. A more detailed study of this can be found in Ribas (1998) (2).

Most of them follow the typologies of specialized books: there are encyclopedias about art with improved access to information, and there are catalogues of collections and museums, often with an added guided tour of the museum that can be presented audiovisually several different ways. But we also find interactive products that are really essays that include a thesis, an idea, a personal approach to a painter or a school of painting. Some of these are probably the most interesting, especially when they explore the possibilities offered by interactivity in order to give a particular view of the chosen topic. Some examples of this type of CD-ROM are *Moi, Paul Cézanne* (3), *Le Mystère Magritte* (4) and *Au cirque avec Seurat* (5).

The interactive project on Joan Miró became a natural part of this line of personal interactive document. The experimental components of this new form of expression lend themselves well to his traits as well as to the IUA's interests and experience. We decided to do the project on CD-ROM, in order to ensure the widest possible dissemination in interactive products and the best technical and expressive possibilities to date given the type of product.

## 3. A three-way production

The various types of reading that an interactive medium offers make the contents even more important than in a linear audiovisual documentary. Consequently, when faced with this type of product the production team must be

made up of specialists in content matter that provides an informative basis on which to construct the final product.

In the case of Joan Miró, it would be impossible to find anyone better than the people at the Foundation bearing his name in Barcelona. It was they who were responsible for choosing the works and preparing the textual content of the CD-ROM. The Foundation also dealt with the copyrights of the numerous resources that they themselves do not control.

Structuring and presenting material in an interactive audiovisual medium is the specialty of the IUA's multimedia laboratory. The tasks involved, often known as interactive design, are one of the research interests at the IUA related to the production of CD-ROM. That meant the IUA was in a perfect position to complement the work of the Fundació Joan Miró.

The Media Investments Club of the European Community, which co-produces innovative, economically feasible projects, became the third member of this three-way project by supplying the financial resources necessary to defray production costs.

**4. General ideas of the project**

Once the production agreements were made, it was time to decide the basic philosophy of the interactive product. It was very important to not engage in the usual trite comments about Miró's work. That meant from the very beginning we could not be tempted to use a Miró-like iconography as the basis for navigating. At this point in the project that was the most difficult challenge facing us, to not use a Miró-like approach but at the same time use something that would not just respect but also evoke Miró's ideas and spirit.

We needed to find an idea that belonged to the world of Miró yet at the same time could be a leit motiv for the interaction's development. Finally, we decided to use one of the most attractive features of an approach to Miró's world in general and to art in particular, i.e., his custom of randomly collecting things in fields or on the beach. The CD-ROM would open the doors to his world by offering an exploration or search for objects or audiovisual elements that had been "abandoned" in the various areas of interaction. The decision as to which objects would be used would be made bearing in mind that the user would see these areas on the screen and would explore them using a mouse.

This basic idea took us to Miró's life in stages. This is one of the most interesting structural features of this CD-ROM, as it would be impossible to access this information in the same way using a non-interactive medium.

**5. Spaces and pre-clips: the level of characteristic interaction**

The contents of the CD-ROM were divided into five parts, following chronological criteria that would give an accurate idea of the evolution of Miró's painting and ideas:

'The beginnings' (1893-1923)

'Surrealism' (1924-1929)

'Times of War' (1930-1939)

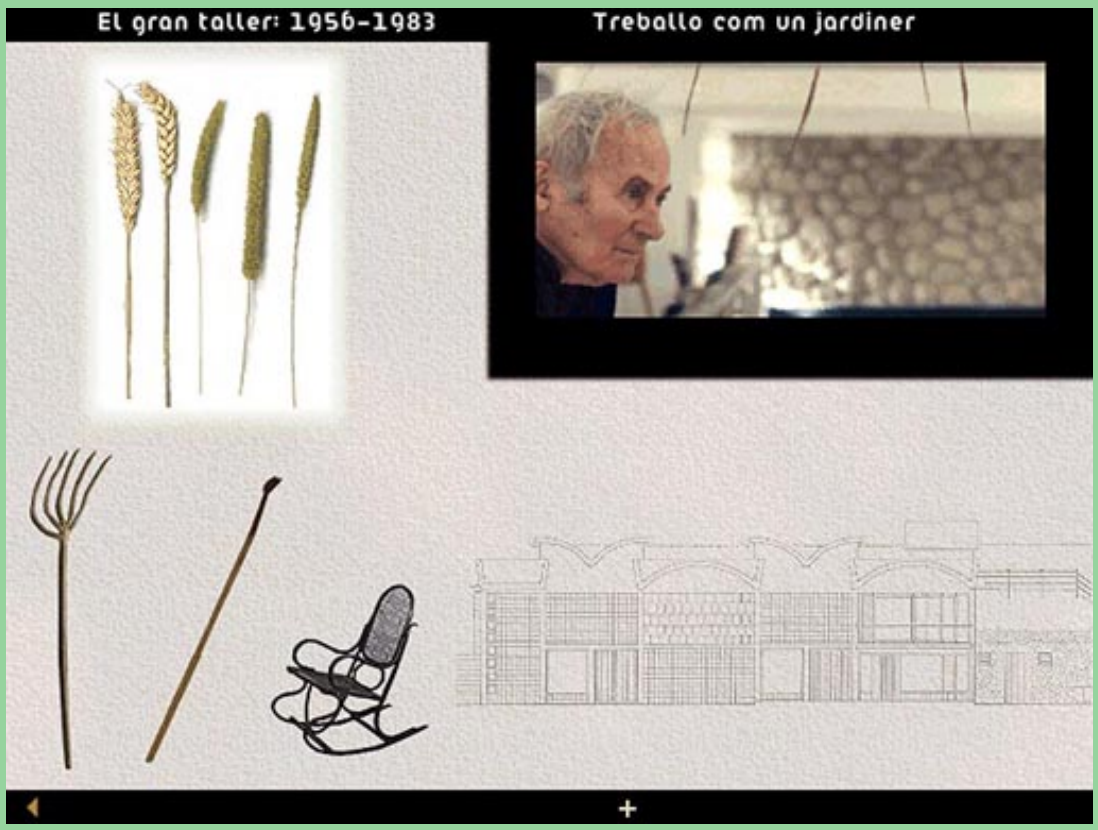
'Plenitude' (1940-1955)

'The great workshop' (1956-1983)

This division also covered the various places where the artist had lived (Mont-roig, Paris, Paris/Barcelona, Barcelona, Majorca) and thus his successive workshops up to his last in Majorca at the end of his life. The workshop thus became the motivation behind the graphic design and music of the interaction for each one of these periods. It was, nevertheless, just a point of departure and in fact each one of these spaces has an interactive, audiovisual treatment that is quite different from one another to reflect the period in the life and work of Miró.




This visualization of the interactive environments together with the decision to make the spaces a way to search for objects gave rise to something that would turn out to be one of the keys for the user in discovering the idea we wanted to transmit about Joan Miró: in the five areas, whether in space or in time, with varying scales and geometries, there are a series of objects the user must "capture" by placing the mouse on top of them. The prize for this positive action is a short animated sequence, which is sometimes mute, other times it has sounds or Miró's words, and the entire sequence is a prelude to what can be found ahead by clicking on the mouse (a more decisive action). These mini-animated sequences are called "pre-clips" in our production jargon.




A panoramic empty beach with only five objects hanging in the sand was designed to provide access to these five spaces. Moving the mouse allows one to discover the entire beach and as the objects come alive, there is a first

sign of what is to come. The beach therefore becomes the place to learn the type of interaction based on pre-clips that will soon appear.



Miró's words are heard at random over a background of waves. They constitute a prolongation of what has already been heard, over the images of the painter drawing in the sand with a cane, to the linear introduction that brings us to this beach. In this way turning on the CD-ROM offers a first contact with the central idea of constructing images by looking for objects or simply constructing images by chance.

**6. The audiovisual level: Miró clips**

Navigation in these initial stages, then, is highly exploratory. The user creates a mental model of what the CD-ROM offers and how he or she can search for elements and receive complementary indications. Nevertheless, we must not forget that the exploration is not an end in itself but rather the means to uncover information about Miró. Consequently, throughout the interaction there are lines at the top of the screen such as a bar to contextualize the structure with the name of the area of current interaction as well as an intermittent indication of where we can be lead by the part of the screen we are exploring at that time.

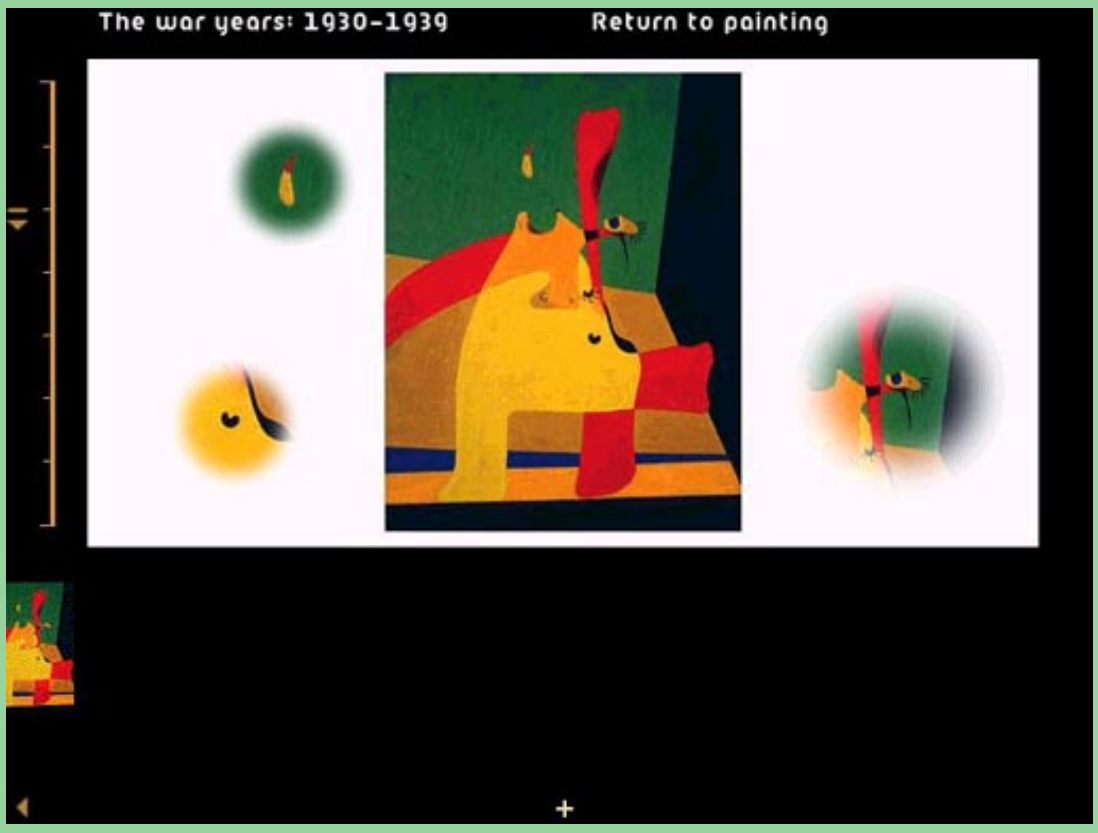



The natural way to delve into the reading of any document is a set of queries that are increasingly specific in a context that you know more and more about. In this vein, this CD-ROM, to the extent that the user makes explicit choices, the ability to explore decreases but at the same time the amount of information provided to the user increases, as the means used to provide the information changes.

The response to clicking on one of the pre-clips in each of the five spaces is to exit the area the user was exploring and enter the levels which offer the increasingly specific, and traditional, information. The visual and auditory treatment tends to reinforce this sensation of a change in levels. In this first contact with the more interactive levels the user can see the animation corresponding to the topic announced on the pre-clip when he or she made his choice. There are 36 of these animations on the CD-ROM, and we have called them *Miró clips*.

Miró clips are audiovisual animations that run four approximately two minutes and revolve around Miró's own words on the topic of the clip, as read by professional speakers. They are always literally what he said in letters or direct quotes from his conversations with others, thus ensuring the authenticity of the artist's words. This lends a sense of proximity and authenticity for the person listening. The entire texts with all the references are available on another part of the CD-ROM.

The visual part of the clips is based on a set of narrow photograms from the image bank from which the CD-ROM has been built. Most of these photograms are reproductions of the artist's works or photographs of his, but there are also works by other artists or images from the areas where his life developed. The animations are based on a wide range of visual resources characteristic of computer graphics, and they enliven the ideas that Miró is expressing simultaneously as well as make them easier for the user to understand. They are structurally divided into fragments, each of which is dominated by one of the photograms. This is shown on the screen with a small miniature that changes in each fragment.




To try to reflect the strong audiovisual component of this level, the graphic screen saves a white square (which refers to a movie screen) for the animations. Users can become mere spectators, as their intervention is not essential for things to happen, but they can also take part in controlling the pace of the animation. The controls on the left side of the screen are explicit: a bar with the same number of divisions as photograms or fragments and a that marks the point where the user is and allows him or her to pause and to drag the animation to any of its fragments.

**7. The photogram level: text, images, and other options**

There is yet another option that users discover immediately: by clicking on any part of the "movie" screen or on the small miniature, the animation stops and the screen shows the 'dominant' photogram of that fragment together with a written explanation about it. This is the final level of information about Miró's life and work: various options for each one of the images.

This level offers the deepest level of understanding the information and is best suited for the needs of the specialist or advanced admirer of Miró's work. That is why the main option, the default, provides information in the form of text about the photogram chosen. All the photograms in the CD-ROM's image bank have their individual text commentaries. Another option available for all the photograms that is activated by a click is to enlarge the image as much as the screen allows (that is why it is called 'whole screen').

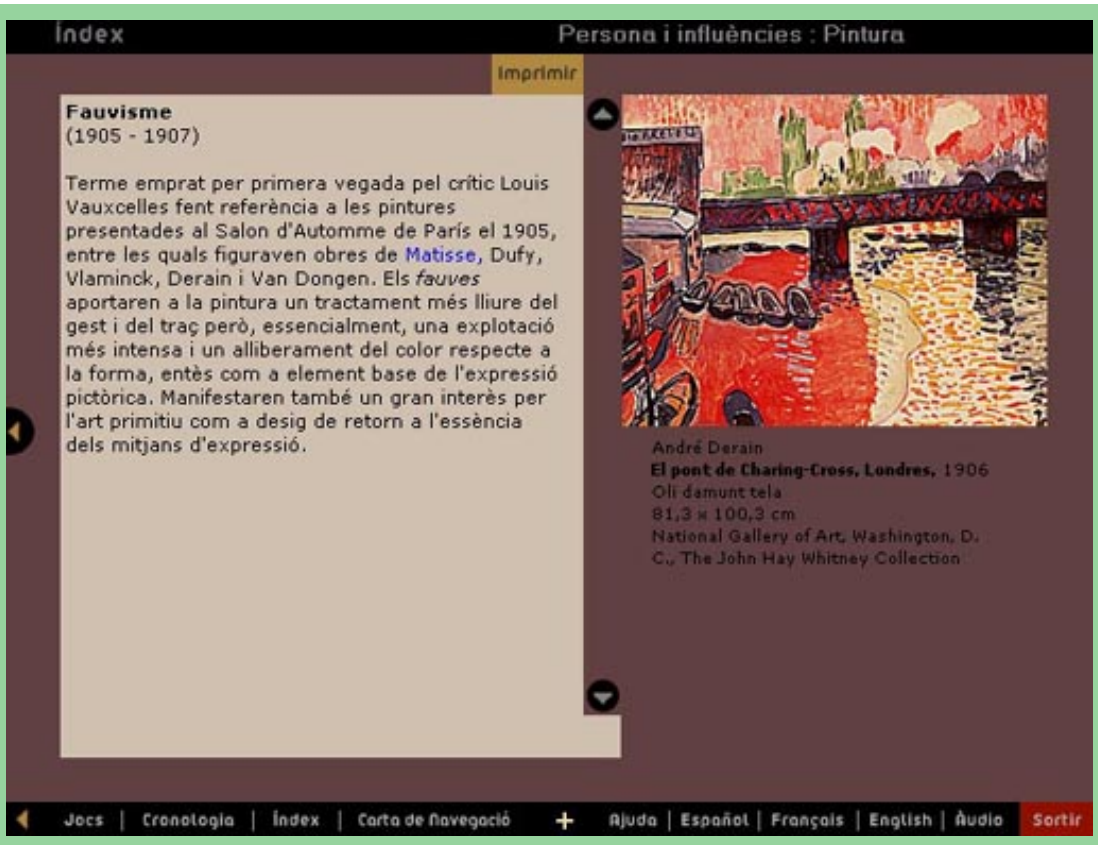



Control of the position in the clip is maintained: the left bar allows us to go forward, backward or to any of the other photograms in the clip, and the user can put the images on the whole screen and stop to consider them for as long as he or she wants, or can read the explanations of the photograms he or she is interested in. When the clip is turned on again, it starts at that point, which is a way to show the internal structure of clips as collections of photograms as it offers three sub-levels of reading of the Miró clip: the audiovisual level, guided and put into context by the words of Miró; the textual level, which permits the most details and analysis; and, the purely contemplative level.

On the right of the screen there is a text menu that allows the user to switch between the *Text* and *Whole Screen* options by means of a simple click on the screen. There is a *Drawings* option for the paintings that have earlier versions to allow comparison of the preparatory stages with the final result. Finally, some paintings have a *Play* option which provides animation or games that aim at giving the user an alternative, entertaining approach to the most important information about the painting or group of paintings.

**8. The hypertext level**

The depth of analysis characteristic of the text option is complemented with a final level of hypertext. The most significant concepts or proper nouns (painters, schools or movements, places, etc.) also have commentary and often specific images. They are accessed via a change in color. The hypertextual information on purpose has a neutral graphic design to reinforce its utilitarian nature.




The interested reader can cover this hypertextual level and broaden his or her knowledge with related concepts. Since this is a specially designed hypertext, each node includes an object of individualized reflection. Most of the paths chosen by the user thus contain a great deal of information.

**9. Alternative direct access**

One of the most interesting traits of interactive systems is the ability to take advantage of a single set of contents to satisfy a variety of needs from, for example, a variety of users. Consequently, the first task in beginning to imagine an interactive product is to understand the characteristics of the people the product is aimed at in order to decide which access routes should be given priority.

In the case of the CD-ROM on Joan Miró, it was difficult to assume a single type of user. Interest in the Catalan painter and in contemporary art in general is perhaps the only characteristic in common that could be assumed. The hypothesis that a large number of the people interested in these topics also possess a innovative view of art. The "central" option of the product became the exploring and discovery access route we have described. Many people will enjoy searching for new interactive forms of expression and using multimedia (texts, sound, images) in several different narrative forms.

However, we did not want to lose sight of the main purpose of the interactive product, what all users expect to find in it, in other words information about the life and work of Miró. This meant creating an alternative way to reach the same information; it had to be an easy, thorough, exhaustive, and more conventional way to access the information. This second route, which is clearly informational in nature, is structured into two parallel options (*Índex* and *Cronologia*, 'Index and Chronology') and an option with additional services (*Jocs* 'Games'). We will refer to this latter access route as access B, to differentiate it from the other access route, which we will refer to as access A.

The basic design of this new access route is complementary to that of the exploratory route: it is designed to provide a fast, flexible, and versatile route to the basic information on the CD-ROM. Access to information in the exploration part is scaled: it appears little by little, based on instructions, hints, prizes, etc., by using various means that change as the user goes into more advanced levels and the "simultaneous" information of images and texts and the entrance to the hypertext only occur at the end. These alternative access routes have to be as fast as possible, for the user to directly reach the end information in the CD-ROM.

These access route must be able to guide users through their information searches. In this sense, the types of interactions are very conventional and must follow the strict rules of design, with criteria aimed at improving the document's comprehension and at orienting users. Some good examples of these rules and their development are Thuring (6) and Kahn (7).

These criteria, which are rooted in common sense, ensure that users have an idea of the amount of information contained on the CD-ROM, of how it is structured and of how to recognize the links or active parts and predict their destinations. With this basic principle of effectiveness of design, all the access routes in this option need to provide in their first level all the information necessary for the user to be able to capture all the material offered to him by the CD-ROM and all the ways to reach these information. As a result, a system of filters based on concepts expressed in text and a clear visualization of the sizes of the materials and the ways to choose subsets of information was put in place.

The *Índex*, which provides access to all the material on Miró in the CD-ROM, is developed on a screen in which each element is represented by a small box and in which the information can be filtered according to unambiguous, different concepts (works, person and influences, etc.) expressed in written text. The sizes and some of the characteristics of the filtering the various user requests are graphically reflected in the set of boxes that are "lit". For example, if the user requests "Pottery" and chronological order, he or she will get an idea of the quantitative significance of this technique in Miró's work and in the period in which he began to use it.




Each box takes the user directly to the text commentary with an image of the element (work, photograph, etc.) it represents. Users can also use the control bar derived from the bar of Miró clips, located on the left, to go from one filtered element to another in whatever order desired; for example, a user could browse through all the pottery.



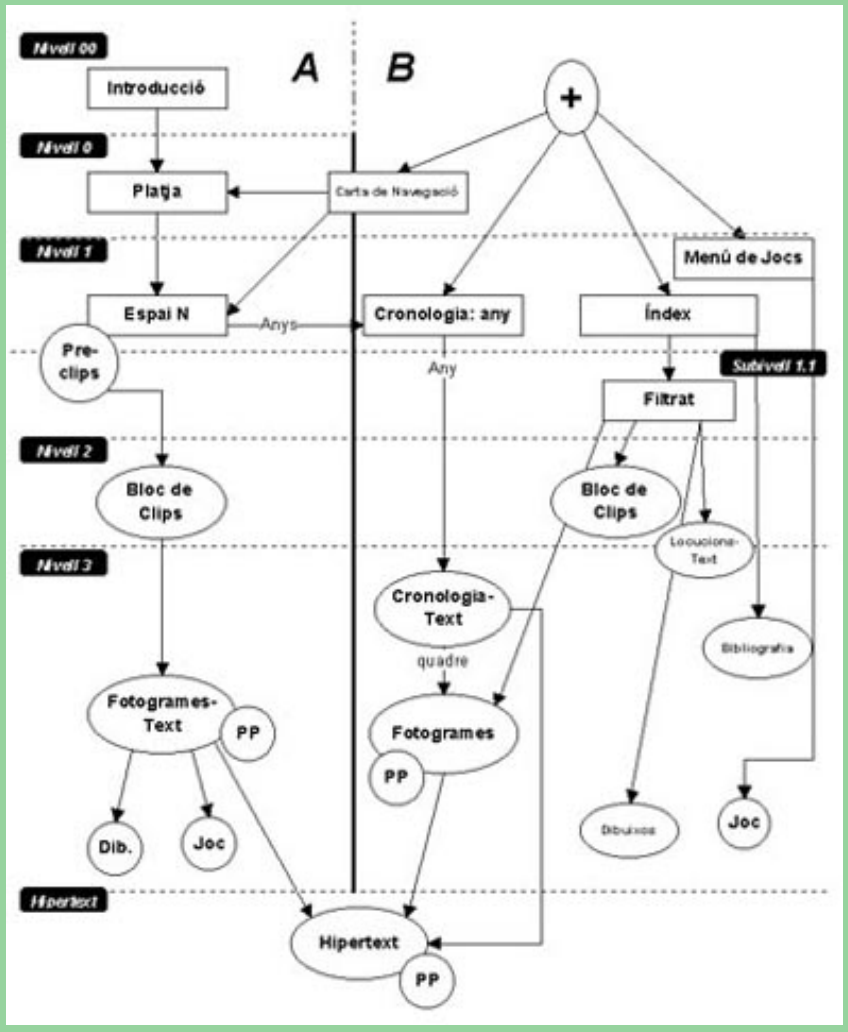

The chronology is resolved using the same criteria: a single screen is used to choose a year in Miró's life, read the text explaining what he was doing at the time, or choose one of the works he did during that year (the works are dynamically grouped into series) to receive more information. This is all aimed at guiding and informing users quickly and directly.




The menu for *Games* is a game that allows users to choose among a total of 12 games included in the CD-ROM. Even in this area, the icon and the name of each allows them to make as informed a choice as possible.

In the figure we can see the overall structure of the *Joan Miró. El color dels somnis* CD-ROM, with the various levels we have mentioned. For example, it is easy to see the ability of the user to reach the most detailed levels of

information step by step in access route A, and more directly using access route B.




**10. Navigating between access routes and visualizing the structure**

It is unlikely to find a user who always only uses either access route A or only access route B. Rather, most people will alternate between the two. In fact, this alternation is the "ideal" way to consult the CD-ROM, with a mixture of the exploratory and information elements that each user designs to his or her own liking.

Consequently, going from one access route to the other must be easy and clear. This was done by having the pixels at the bottom of the screen constitute a line of services. This line can be accessed at any time, and thus the options on it can be activated at any moment. It is as if it were outside the program, and this ‘outsiderness’ is reinforced by the black borders around the screen. In the center of the line there is a + sign that when clicked on activates two tool bars. The one of the left brings up the three access B options, Index, Chronology, and Games. This is the fastest way to go from part A to part B. The fourth option on this bar is the *Carta de Navegació* (Navigation Chart), which allows the user to go to the Beach or to any of the five parts of part A. This is the way to go from B back to A. A level back-up, represented by a triangle to the left of the lower bar, allows users to reverse the path taken level by level, and specifically allows return to the last part of access A from the highest level of access B.




Another purpose of the Navigation Chart is to visualize the overall structure in the Beach and Areas that are a part of Access Route A. These visualizers/navigators are widely used in culturally oriented CD-ROMS whose main access is more or less exploratory. They orient users, allowing them to see and understand the overall structure of what they are exploring. They are closely related to the floors in museums or buildings that have the dual purpose of summarizing the museum's holdings and being able to find any particular object or collection. An original study comparing the two types of maps can be found in Kahn (8).

**11. Conclusions**

In this paper we have provided background information on the production of the CD-ROM *Joan Miró. El color dels somnis* and have placed it within a wider typology of CD-ROMs about art. We have described the basic philosophy behind the project and have shown how it materialized into a specific form of interaction. We have detailed the various types of navigation that can be done in this CD-ROM, separating the exploratory access route clearly from the informative access route. Finally, we concluded by remarking on the structure of the various types of interaction possible.

**Notes:**

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(2) Ribas, J. Ignasi. 1998. "Els sistems interactius multmèdia com a suport de difusió de les arts plàstiques. Revista DigitHum. Barcelona: Universitat Oberta de Cataluna. On the Web (address: www.uoc.es/DIGITHUM).

(3) Several authors. 1995. CD-ROM Moi, Paul Cézanne. Paris: Réunion des Musées Nationaux, Télérama i Index +.

(4) Several authors. 1996. CD-ROM Le Mystère Magritte. Brussels: Virtuo, Réunion des Musées Nationaux.

(5) Several authors. 1996. CD-ROM Au cirque avec Seurat. Paris: Hyptique, Réunion des Musées Nationaux, Gallimard Jeuneusse, France Telecom Multimedia.

(6) Thuring, Manfred, Jorg Hannemann, & Jorg M. Haake. 1995. "Hypermedia and Cognition: Designing for

Comprehension." Communications of the ACM, 38, 8 (August), New York.

(7) Kahn, Paul, Ronnie Peters, & George P. Landow. 1995. "Three Fundamental Elements of Visual Rhetoric in Hypertext." Designing User Interfaces for Hypermedia, ESPRIT Research Reports, Springer Verlag.

(8) Kahn, Paul, Krzysztof Lenk, & Magdalena Kasman. 1997. "Real Space and Cyberspace, a Comparison of Museum Maps and Electronic Publication Maps." Paris: Museums and Interactive Multimedia.

