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Integrating media within interactive discourse: the case of cultural disseminatio

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Abstract

The intrinsic feature of interactive discourse is the inclusion of the management of users' actions. Such implementation in the digital medium adds the capacity to include unlimited forms of dialogue and media integration. The conjunction of this integration with interaction is, in our opinion, the paradigmatic feature of interactive multimedia, hypermedia. In cultural dissemination there are very few interactive applications that really take advantage of these possibilities. This article presents some hypotheses on the possible causes of this situation, outlining a theoretical framework to analyse that characteristic of the digital medium and describing some examples that may be quite revealing.

Key words

media integration, interactive design, cultural dissemination, hypertext rhetoric.

Resum

La propietat intrínseca del discurs interactiu és incloure la gestió de les accions de l'usuari. La seva implementació en el mitjà digital li afegeix la capacitat d'incloure il·limitades formes de diàleg i integració de mitjans. La conjunció d'aquesta integració amb la interacció és, al nostre entendre, la característica paradigmàtica dels interactius multimèdia, els hipermèdia. En difusió cultural hi ha molt poques aplicacions interactives que aprofitin profundament aquestes possibilitats. En aquest article plantejarem algunes hipòtesis sobre les possibles causes d'aquesta situació, esbossarem un marc teòric per analitzar aquella característica del mitjà digital i descriurem uns exemples que poden resultar reveladors.

Paraules clau

Integració de mitjans, disseny interactiu, difusió cultural, retòrica de l'hipertext.

Introduction

The typical discourse of the internet seems fated to fit the different media into rectangles: from the browser's window, inevitably related to the standard interface of the operating system, to the interior vertical, horizontal and central frames, joining discourses seems to be reduced to a game of fitting boxes into each other, a boring puzzle. The two-directional confluence with television, the box-medium *par excellence*, appears to lead us inevitably to this dominance of the rectangle, two Cartesian dimensions that delimit and create artificial boundaries to collaboration and integration between discourses.

On the other hand, most games are based on constructing a world that is more or less realistic, in which there is the chance to move and act. We get excited both about the particular design of each action as well as the possible configurations in the form of sophisticated, complex and stimulating manoeuvring. But the different media involved in constructing the environment – graphics, sound, perhaps real or photo-realistic images, animation, etc. – collaborate with the single desire to disguise their boundaries and construct an integrated whole in which, and with which, the game can be carried out.

Nonetheless, there are many alternative ways to make different media converge in digital discourse. In fact, we believe that these different ways of integrating multi-modality and interaction is what best typifies the digital medium. At the end of the 1990, some CD ROMs already noted some of these possibilities, later almost forgotten under the enormous weight of the internet and the games we know. The strength of these two benchmark hypermedia (*hyper* in the discursive sense but particularly also in the financial and social sense) is probably the main cause of the virtual and, we hope, temporary disappearance of these pioneering experiments.

This article ends with a short description of some significant examples from that brief time of interactive production for cultural dissemination. In order to reach these examples, we will follow some successive steps. Firstly, we will note some of the characteristics of the internet that, strictly speaking, do not play an important role in its current configuration, in order to explore the possibilities we are interested in here. After we will describe the conditions required by interactive products in which such possibilities can be found. We will then outline some theoretical concepts on multimedia interactivity that should provide us with insight into the range of possibilities we hope to open up with our final examples.

We take the internet as a reference because we believe that, as an heir to cultural dissemination initiatives on CD ROM, the internet might be and in some cases is (Ribas 2008) one of the spheres where innovative initiatives for media integration can be developed. It is not that these are not possible within

the sphere of games – in fact, there have been some quite successful attempts at combining games and cultural dissemination during the same period we are looking at – but the priority given to playability and immersion means that its reasoning is very different to the reasoning we are developing here. And, in spite of the interest of some experiments with media, here we cannot enter the extensive sphere of interactive art. Moreover, its intrinsic freedom distances it from our focus of study, namely cultural dissemination.

Technological convergence, media integration and the internet

We still remember the interactive audiovisual experiments based on video-disk, when it was necessary to "orthopaedically" mix this analogue source of video and audio using a computer, perhaps also with some simple computer text or graphic. The fact that all the different media of a multimedia application are digital files that can be handled uniformly by the same computer system that contains them gave true meaning to the term hypermedia applications. Technological convergence naturally entails the possibility, inevitability, of using all kinds of media: "(...) (technological) convergence would not be viable without the digitalisation that means all kinds of sources of information can be manipulated singly, i.e. it doesn't matter whether the information was originally audio, video, graphic or data as, thanks to digitalisation, everything is bits" (Prado 2003: 3).

Taking this into account, in an environment such as the internet, so huge and with all the flexibility of a digital medium, it's surprising not to find more experiments in combining media along the lines of what also used to be done, and with much more difficulty, on two-dimensional media: parchment, paper, silk... Research into the integration of illustration and typography, like the characteristics of capital letters and other elements of so many medieval manuscripts. Or more special cases in which the texts, using the typographic resources of size, colour and direction, construct figures that refer to their content, such as those of the French manuscript copy of the beginning of the 19th century of the poem *Eridanus*, originally by the Greek poet from the 3rd century BC, Aratus. Or the techniques used in the often very long Japanese and Chinese horizontal rolls on silk, the *emakimono*, popular between the 11th and 17th century (and perhaps earlier in India), in which the calligraphy and pictures, on occasion united by a single production technique, literally unfold stories and options before the active spectator that opens and unrolls them.

Why, in spite of these integrating characteristics of the digital medium, is it so difficult to find something with similar vitality on the internet? A quick tour around the web will show us a majority of sites where it seems that the only thing exported from the paper medium are the least creative combinations of text and image, mere juxtapositions: an illustration next to a

Il·lustració del manuscrit *Eridanus* del segle IX.

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Available at the British Library website: http://www.bl.uk/

text to complement it, a text at the foot of an image or video, or as a title... It's true that the internet explosion as from the last few years of the 20th century brought to an abrupt halt the experiments that were starting to be undertaken in offline media.

This situation is the consequence of the significant weight of characteristics inherent to the internet itself, particularly encouraging certain ways of carrying out discourse. The internet's great social appeal comes from the combination of its two key properties: firstly, its unlimited capacity to store and instantly return all kinds of content, much of it pre-existing (ideally all pre-existing) and other specifically constructed content with radically heterogeneous criteria; secondly, its hyper-communicability, the egalitarian capacity for everyone to swap, with intrinsic ease, the role of receiver and producer. In neither of these two cases is the exploration of innovative forms of interaction and media integration particularly useful in achieving their objectives.

Prioritising content or communicability means that experimentation or depth in design is not a priority value for the resulting websites. This situation can be understood better via the distinction made by Elizabeth Boling between design quality and production value, i.e. the relative level of sophistication in a product's overall treatment. For example, the quality of interactive design does not necessarily improve with the amount of content, nor with the number of different media, nor with sophisticated graphic treatment, nor with the intrinsic quality of all its components. And neither is the opposite the case. In fact, Boling believes these two concepts are independent and consequently proposes a way of analysing interactivity based on the generation of a Cartesian grid (Boling 1995).

Production value is the key parameter to evaluate those sites based on the intrinsic appeal of previously existing content. The paradigmatic case might be YouTube, where all its

tabs and small rectangles with the list of related videos, of videos being watched at that time, of searches, comments and all kinds of tools, complement (and are secondary to) the window where the portal's greatest value is shown, namely its videos. Another case with quite a lot of similarities is that of firms or institutions that have a valuable asset, e.g. of an audiovisual nature, such as production houses or TV channels, but also specifically artistic or cultural assets, such as museums, foundations or heritage centres.

If these centres applied a philosophy of cultural service when joining the digital medium, they could go beyond the simple transposition of previous content and embark upon the creation of intrinsically digital products. In fact, some TV channels already have interactive applications in parallel with some of their series, such as the very simple examples on Discovery Channel (<http://dsc.discovery.com>), and some museums do the same with their exhibitions, such as the very interesting examples by the San Francisco Museum of Modern Art (<http://www.sfmoma.org>). Incorporating this kind of material could constitute great added value. "These new websites should contain that which can provide more competitive edge to the audiovisual industry: multimedia and interactive content" (Codina 2003: 41).

In the case of the second characteristic of the internet, hyper-communicability, not only the design quality but also the production value, although not seen from a classic viewpoint, become secondary to the strength of the desire for communication. In this respect, the internet's appeal is the appeal of utopia: we have, such as we may never have had before, the sensation of taking part in constructing a world we could hardly have imagined or desired, a world that suddenly becomes possible, everyday, and is within the reach of everyone. Behind this idea of access to all existing and imaginable information, behind this idea of absolute interconnection there is a myth; that of the information society seen as "a state reached when all actors in society, both individuals and public and private organisations, have the chance to access and disseminate any information, from anywhere, immediately and in the format they wish" (Prado 2003: 5).

The conviction of these desires, closely related to the internet, has shifted the focus of attention mostly towards aspects associated with hyper-communicability in detriment of constructing more elaborate interactive discourses, discourses more along classic lines where an author uses a medium specifically to transmit ideas in a certain way. It is certainly in such an area, closer to tranquil, noise-free reflection, where we might find the experiments we are dealing with here. We believe the internet is sufficiently extensive to contain these "designer discourses" but neither do we rule out a desirable evolution of the as yet primitive e-books of today, perhaps overlapping with other mobile devices, perhaps including all the necessary wealth of media. This might be one way to secure the definitive and constantly delayed implementation of interactive discourse.

Interactivity: managing actions and types of interaction design

Saying that the basic characteristics of interactive discourse are interactivity and multi-modality is almost a tautology that can be expressed, with variations, in many different ways. In order to refine our own characterisation further, we will base ourselves on one that has been particularly recognised and is almost canonical, namely that of Janet Murray whose interest centres on the possibilities of digital narrative. Her characterisation of multi-modality in particular will provide us with a good starting point to achieve our own view of media integration. Murray believes that interactivity and immersion are the two specific aspects of the digital medium (Murray 1997: 83 and others).

According to Murray, interactivity, that which makes communication with a computer attractive and different for us, can be considered as made up of a combination of the procedural, the basic characteristic of the computer in making a succession of orders or procedures, and of the participatory, our capacity to provoke behaviours that intervene to modify these procedures. For Murray, interactivity is the basic characteristic of what is interactive, what defines its essential figurative property: "(Computers) are responsive to our input. Just as the primary representational property of the movie camera and projector is the photographic rendering of action over time, the primary representational property of the computer is the codified rendering of responsive behaviours" (Murray 1997: 86).

Although, in this particular formulation, Murray seems to focus only on responses, it is clear that we should not limit ourselves to a strongly asymmetric situation in which a person asks and the computer responds. The attractive forms of media integration can only arise by turning the computer into a dynamic "alive" component of its relationship with the person: "[...] an interface is not simply the means whereby a person and a computer represent themselves to one another; rather it is a shared context for action in which both are agents. [...] 'agent' to mean one who initiates action [...]" (Laurel 1993: 4).

The actions we carry out with a computer are merely a part of the sum of actions we carry out during the rest of our personal activity. It is clear that, in many ordinary situations, our objectives and our intentions are not completely defined: instead of subjecting our behaviour to analysis and exhaustive planning we adapt our general intentions to the opportunities offered to us by events. In other words, the cycle of action - goal/execution/evaluation – may start at the third part due to a change in the situation of the world. Each contextual situation will define the alternatives open to us but, in general, opportunist actions can be more stimulating than direct ones: "Opportunistic actions are less precise and certain than specified goals and intentions, but they result in less mental effort, less inconvenience, and perhaps more interest" (Norman 1988: 49).

This viewpoint allows us to divide interactive elements, or the various parts of an interactive element, into two different kinds

depending on what we expect, when designing them, concerning whether the user's motivations will be largely extrinsic or intrinsic. They are extrinsic when they are external to the interactive product: a person consulting a concept on Wikipedia, the programming of a TV channel on its corresponding portal or videos on YouTube only needs to be provided with fast, effective, hassle-free access to the information he or she wants. On the other hand, it may be considered that someone who decides to install a CD ROM or to consult the interactive extension of an exhibition on a museum's website or that of a TV series may have a specific, intrinsic interest in the interactive product being consulted. The user can get excited, can enjoy innovative unexpected proposals that provoke and stimulate this initial interest and that even deviate it, resulting in the initial goals being modified, adapted or replaced.

In a previous study we analysed the consequences of this dichotomy for interactive discourse theoretically and heuristically. The construction of this discourse, the process of designing interaction, must be based on knowing how to strike, at any particular time – both globally and locally – the necessary balance between design for efficacy and design for stimulus (Ribas 2000).

It is in this second case, concerning a user with a specific interest in interactive discourse, that the whole range of indirect solutions can be used, solutions aimed at mechanisms to involve and stimulate the person interacting. It's not easy to systemise these solutions but it's clear that they are all related to improving or increasing involvement: encouraging users to discover, surprising them, broadening their expectations. In general, trying to maintain and optimise the degree of enjoyment so that the interaction does not only maintain prior expectations or desires but causes unexpected and perhaps never imagined things: "Enjoyment is characterised by this forward movement: by a sense of novelty, of accomplishment" (Csikszentmihalyi 1990: 78).

The kind of media integration we are focusing on, and for which we will provide examples at the end, is based essentially on the explicit but smooth convergence of the different media managed by interactivity and is one of the most powerful design tools of its type.

The immediacy and concealment of the media

According to Janet Murray, the second characteristic of the digital environment is immersion, the part that allows us to add dramatic aspects to our relationship with the computer. Murray breaks immersion down into spatial immersion, the capacity to show us spaces through which we can "move", i.e. "surf" (this movement is what provides us with a spatial feeling, whatever the physical interface employed) and encyclopaedic immersion, access to a quantity of data that seems endless and that translates into the possibility of almost unlimited wealth of representation.

It's obvious that Murray is deliberately concentrating on only one of the possible future forms of the digital medium: its immersion prototype is the holodeck from the second series of *Star Trek*, a place indistinguishable from reality, where all traces of the computer have disappeared. This is a new version of the myth systematically generated by communication, that of the disappearance, transparency or inexistence of the medium. The projective geometric perspective of the Renaissance, its optical and chemical automation in the *camera obscura*, in photography or in the cinema, and the new and ideally "perfect" algebraic automation in digital images are successive attempts at offering an impossible experience without mediation. In this respect, the holodeck is no more than an extrapolation of experiments in contemporary realistic virtual reality in a situation where all intrusive interfaces have disappeared.

Naturally, what sustains the desire for immediacy is not an ingenious belief in the reality of what is being experienced but the existence of a point of contact between the medium and what it represents, of a certain mental model that relates them: optical via photography, geometric via perspective or algebraic via digital image. This means that, in desktop environments, although the physical interface is more obstructive, the same logic of immediacy can apply. Hence the change in paradigm resulting from the availability of computer graphics in the 1980s and 1990s. Direct manipulation interfaces and their associated graphic user interfaces (GUI), where an analogy such as a "desktop" or "toolbox" allows us to understand the actions with the computer in function of other, already fully assimilated actions that are often from a previous medium, are based on this philosophy of making the computing medium imperceptible.

The same explanation can be applied to the characteristic immersion of computer games. In spite of the frequently low quality of their graphics, it is remarkable how easy it is for players to project themselves within old realistic games such as *Myst* or *Doom*. This is a consequence of combining automatism (with which we are now used to perceiving representation in cinematographic perspective respected by these games) with the fact of interacting, of placing ourselves inside the world represented.

In effect, the sensation of immediacy can be achieved with various combinations of these two conditions: negation or ignorance of the medium's presence (and of all its associated aspects, such as the author) in the act of mediation, and the situation of the spectator in the same space and perhaps under the same conditions of intervention as the objects represented. These conditions can be found to different degrees and in different combinations in all the historical examples we have mentioned.

Hypermediacy and making media explicit

As stated by Jay David Bolter and Richard Grusin (Bolter 2000), provided there is media convergence, immediacy is

inevitably associated with another apparently contradictory property, namely hypermediacy. While immediacy aims to eliminate or automate representation, hypermediacy does the opposite, aiming to place it at the forefront, catching the user's attention concerning the presence and intervention of the media in the act of representation.

According to Bolter and Grusin, the digital medium does what all its predecessors have done when they appear, namely remediating, i.e. defining itself in relation to the previous media, presenting itself as their remodelled version. This appropriation of the old media on the part of the new (polymorphic as never before in the case of the digital medium) leads to the appearance of this productive tension between the experiences of media absence and presence, between immediacy and hypermediacy. In a unified space we penetrate via a kind of window, hypermediacy opposes a heterogeneous space that visualises in various parts or channels, perhaps "windows", the representations of other media, creating possible openings to the different sensorial varieties of the experience.

The window interfaces of operating systems and internet, with their characteristic "rectangular" style, are obvious examples of the practice of hypermediacy. They serve to highlight in which way their strategies can directly contradict those of immediacy. On the one hand, the windows environment does not aim to unify space under a single privileged point of view in which the observer is located: each window defines a point of view that can be strongly conditioned by the diverse nature of the medium contained in the window: verbal, visual, audio... On the other hand, the processes to manage the windows and the explicit contact with the different media mean that the interface not only does not disappear but becomes reinforced to ensure the user is in contact with it. In this respect, this mode of integrating media forms part of the most significant trends in contemporary art, a characteristic of which is to attempt to make the spectator aware of the presence of the work.

Immediacy, hypermediacy, desire and fascination

In the examples we gave at the beginning to express our nostalgia for a different internet, we always wished to cause the same outcome: illustrated capital letters form part of the main text, and the images made up of letters in the case of *Eridanus* form part of the image, but both cause and place the reader to appreciate the integration of text and image. This aim is for the spectator to recognise the medium as a medium and to enjoy this process of recognition. "Today as in the past, designers of hypermediated forms ask us to take pleasure in the act of mediation..." (Bolter 2000: 14).

As we have seen, disappearance, transparency and immediacy in the process of configuring a medium is a desire than seems to have dominated throughout the history of art and communication in the west. Next to it, and closely related to this desire, there is a minority and only apparently contradictory feeling: the fascination for explicit presence, exposition and collaboration between media. The enjoyment it can cause justifies the value we give it in designing stimulating interactive elements.

The relationships between desire and fascination are complex but help to understand some of the historical reactions to new media, such as those produced by simulation games from the movement of the first part of the 19th century, such as the phenakistoscope and even the reaction of the first cinema audiences. Although these are extraordinarily hypermediated experiences in which the devices' extremely high visibility continuously called attention to the fact that it was a mediated representation of movement, the strength of the desire for immediacy, as this was a time when dynamic representation was starting to become more powerful than static representation (Crary 1990: 151), made the experience valuable for the spectators of the time. At the same time, the fact that the medium's mechanisms were explicit made the experience pleasurable per se. This kind of functioning, of positive tension between immediacy and hypermediacy, can also explain the easy involvement in games that are not visually realistic but with a markedly physical component, such as those of the Wii platform by Nintendo.

More hypermediacy strategies

Medieval examples suggest that the interface of windows or frames on the internet is not the only way to construct hypermediated experiences. To relate the different media that converge in the digital sphere, the interaction designer must define their audiovisual and conceptual relations. Depending on these relations, we can see very different results in terms of media integration. A first step in studying them is to define the range within which they can move, between juxtaposition and absorption: "In the logic of hypermediacy, the artist (or multimedia programmer or web designer) [...] does so by multiplying spaces and media and by repeatedly redefining the visual and conceptual relationships among mediated spaces, relationships that may range from simple juxtaposition to complete absorption" (Bolter 2000: 42).

An alternative analytical method that can be used to differentiate the strategies between these two extremes is the semiotic analysis of syntagma in multimedia. The most reasonable option in adopting this point of view is to take as a reference the closest and most extensively analysed medium, namely cinema. This is the option of most authors and in particular that of Bo Fibiger. Unlike the cinematographic medium, in which the spatial dimension is resolved exclusively through the internal configuration of the staged shot, in multimedia there can be various spatial presentations simultaneously, perhaps each one in a window. Even sound, closely related to the image in film, can now be a node apart and therefore directly controlled by the user.

An initial differentiation in the possible syntagmatic constructions of multimedia space is based on whether the relationship between the media is synergetic or not synergetic. In principle, a non-synergetic syntagma corresponds to the usual window environments that, due to their nature, hinder discursive synergy between what they contain. According to Fibiger, this configuration can become confusing: "A non-synergetic relationship exists when different unrelated information is presented at the same time in different windows or frames. Non-synergetic syntagmas have a tendency to confuse the user, normally looking for consistence - or they can be competitive as different entries" (Fibiger 1999, 4.2.2).

Considering these two different parameters, the forms of media integration we are interested in here are closer to absorption than juxtaposition and closer to synergetic than non-synergetic forms. The examples we will give all fall into this area of study. Unfortunately, analysing in detail the significant variables to be considered in the field we have just defined is an objective that is beyond the scope of this article. This is, on the other hand, quite unknown territory and we hope it will be an object of study in the future.

Action and its integration within interactive multimedia discourse

However, we will explicitly stress what we believe is the most significant characteristic of the interactive medium, namely the integrated consideration of the relationship between the media and the management of user actions. Few authors insist on this enough. Bolter and Grusin themselves seem to see hypermedia only as a simple collage of media previously "remediated" by the digital monster: "In photomontage the pre-existing forms are photographs; in literary hypertext they are paragraphs of prose; and in hypermedia they may be prose, graphics, animations, videos, and sounds. In all cases, the artist is defining a space through the disposition and interplay of forms that have been detached from their original context and then recombined" (Bolter 2000: 39).

But interactive multimedia products are much more than the mere juxtaposition of media: an analysis does not make sense if it does not consider the ways in which the media can provoke and assemble the user's actions. As stated by Jim Rosenberg, adopting the perspective of reception, in an interactive product the structural operations are closely mixed with the multimedia text so that the structure of an interactive product is as much as or more than the network of connections planned by the designer, what the user gradually discovers through his or her actions: "A hypertext is a document in which interactive structure operations are intermingled with the text; hypertext structure is usually investigated from the point of view of the 'real' structure connecting these operations. […]. This overall structure graph may not be apparent to the reader. Readers *discover* structure through *activities* provided by the hypertext" (Rosenberg 1996: 22).

One obvious consequence is that this play between action and media must form a relevant part of the interactive discourse. In the same way that any discourse (verbal, written, audiovisual) plays with all the elements at its disposal to construct an integrated whole, the rhetoric of hypertext must include action and its possibilities for integration with other elements in constructing a coherent interactive discourse. Free games with the media, as habitual in interactive products as with any other sphere, especially when a technology appears that enables new and different things to be done, only make sense if they constitute a coherent element within the overall discourse. Brenda Laurel expresses this need for coherence quite concisely: "Multiple modalities are desirable only insofar as they are appropriate to the action being represented" (Laurel 1993: 160).

Going back to the expression of Janet Murray, we believe that the basic figurative property of computers is how users' actions are handled, taking into account the different possibilities for media integration, both between the media and with these actions.

Some examples of media integration on CD-ROMs for cultural dissemination

The history of CD-ROMs for cultural dissemination starts and practically ends with the 1990s, and their expansion occurred in a very particular way, based on French cultural and museum management. A significant observation within the context of what we have just outlined is that the first products were opened in another window of the operating system's environment, so that users were prepared for working in a computer application. One example of this paradigm (not the first but the most well-known) is that of the Microsoft Art Gallery (Microsoft 1994). As from a specific point in time, at the latest with the first edition of "Le Louvre" (Montparnasse Multimedia 1994), most CD-ROMs of cultural dissemination started with the whole screen black and usually showing a title, some credits and probably music.

This step from a computing reference to a cinematographic reference was strongly affected by the technical circumstances of the time but also shows a desire for immersion in the developers of the incipient medium. The cinematographic reference, the apparent control of all computers on the part of the application and the disappearance of the framing window or any other kind of frame reminiscent of subordination to operating systems and to computers in general was maintained until the CD-ROMs had almost become extinct. When attempts were made to construct equivalent applications for the internet, the inevitable presence of the browser window, with all its anti-immersion possibilities, became a decisive drawback for this

Opération Teddy Bear, 1996

Source: INDEX + 1996

kind of treatment. Application on the internet enforced a global treatment based on juxtaposition more than absorption.

Below we provide a short description of some examples taken from these CD-ROMs. The criterion is deliberately quite subjective; in fact, it is the appeal, the fascination we believe they can produce. As the aim is to show the possibilities of these forms of media integration in an exciting design, we believe this is a good criterion. Later on more objective aspects should be dealt with. However, so as to follow an order, we will start with those cases that affect the interactive products in question in more global terms, ending with more local examples.

"Opération Teddy Bear" (INDEX + 1996) is constructed on a huge database with facts, events, places and people from the Second World War. Naturally there is a large number of conventional accesses to this information, basically presented with text and photographs, animation and maps. However, the main treatment focuses on a story located in occupied France and narrated in a format taken from paper-based comics but, on being absorbed by the digital medium, includes a large number of new possibilities. Logically, as the story develops many different contextualised accesses open up in the database.

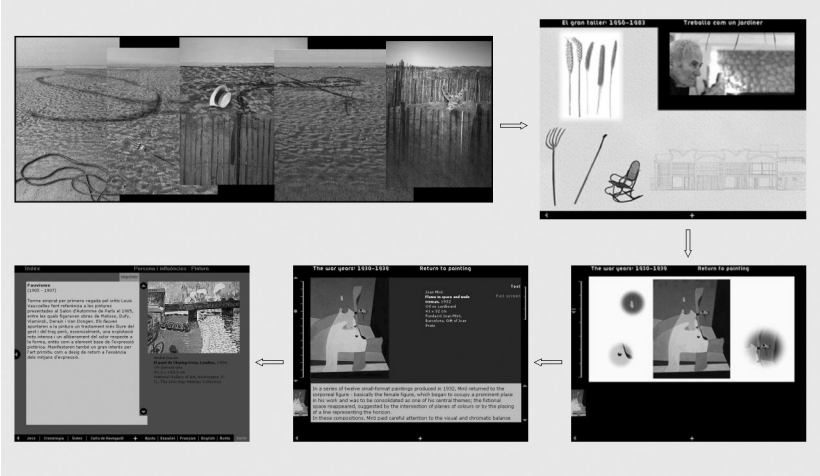
The story, based on Nazi documents hidden in a teddy bear, progresses as different vignettes are "opened". This is done linearly using automatic fragments that employ different dynamic resources from both comics and cinema, as well as from their integration: some characters or objects move through the vignette or even to other vignettes, text bubbles appear, words, sounds and some music can be heard. Often the action stops and we must intervene for it to start up again, in general clicking on a bubble, but also by unveiling a window, placing us in the role of a character, to be able to see the outside from where a ball will move, bounce and give us access to the next vignettes or drag a character from one box to another so that the action can continue, etc.

The different possibilities provided by this case of absorption of the comic medium by the digital medium are so many and so diverse that we cannot summarise them easily. In general, the aim is that the user's intervention should drive and also be a reminder of the surprising possibilities of the integrated medium. There are some interesting dramatic effects. For example, as a means of involving users, the first intervention, by activating a vignette with a close-up of an SS captain, makes the voice of this character order the shooting of three resistance fighters. It is the start of the story. Also attractive are some discourse resources, such as a sequence that is developed at the same time in space and time, seeing and hearing it simultaneously both in close-up and in a general perspective in two successive vignettes.

Concerning the CD-ROM "Joan Miró. El color dels somnis" (Joan Miró Foundation, 1998) which was produced at the Universitat Pompeu Fabra in collaboration with the Miró Foundation in Barcelona, here we shall only highlight one aspect of its main access that relates the structure with the user's actions and with the dominant media.

This main access is divided into five levels or layers differentiated by their audiovisual, interactive and informative treatment. The first is a beach where there are some objects, such as those Miró used to look for, that provide access to five different Miró areas. In these, once again some other objects appear, when we "capture" them, putting the cursor over the top, small animations integrated in the space, as a prelude to what can be found when we advance by clicking on that branch of the interactive product. The click takes us away from the area to an animation conducted by the words of Miró and based on images from his life and work. Another click on one of the images that go to make up the animation leads to textual information on that image and additional options for studying the work: enlargement, sketches and games. And by clicking on the active words of the text, the fifth level can be entered, the hypertext space where users can surf freely around the textual information.

Joan Miró. El color dels somnis, 1998



Source: Fundació Joan Miró, 1998

Each level is therefore characterised by a strongly differentiated media treatment: of exploration and fictionalised at the first and second levels (the first, more abstract, the second, more concrete); an audiovisual of documentary inspiration at the third level; of text, image and characteristic options at the fourth level; hypertext and with fixed subsidiary images at the fifth level. This passing through levels where, by choosing, the capacity to explore is reduced while the amount of information is increased and consequently the type of medium employed changes, used to explain the proposed structure to the user. Content, media and interaction collaborate in the process of receiving the interactive product. Interactive resources such as a simple "back" through levels tend to enhance this complicity.

Scarcely one year after *Apple QuickTime VR* technology appeared, the authors of the CD-ROM "Orsay. Visite virtuelle" (Montparnasse Multimedia, 1996) provided an extraordinary example of how to creatively subvert technological possibilities. In the *Récit* section, associated with some outstanding pieces of the CD-ROM, replaced the predictable video animation based on fixed images (pictures, photographs) with a spatial collage placed over the cylindrical panorama characteristic of QuickTime VR. The usual advance control through the panorama: the time controls the space. The usual resources of cinematographic discourse (shot composition, editing) are replaced with the control of the two user displacement options provided normally by QuickTime VR technology: free movement through the panorama and the zoom. The voiceover is synchronised with variations in these two parameters to construct an explanatory lineal discourse, a story (*récit*) on the theme in question.

But not only that. At any time users can control the discourse and move through the space-collage in the same way as through an architectural space, dragging it and increasing or decreasing it with a click. Naturally, this also drags the voiceover, which now "obeys" the spatial transfer in terms of time. Complementary to this, a standard location marker (a rather uninspiring ball on a bar) means that the development of the animation can be followed through time and controlled with the usual dragging.

The application "Makers of the Twentieth Century" (News

Orsay. Visite virtuelle, 1996

Source : Montparnasse Multimedia 1996

Multimedia 1996) is constructed on pre-existing material: the text-based biographies, photographs and news items from the time of the 200 most important people in the 20th century according to the *Sunday Times Magazine* of London, where the material had initially been published on paper. Maintaining this base material, the Israeli firm Zappa Digital Arts constructed an interactive layer to conduct access to this final material. This is a product with a lot of aspects to be highlighted, but we will focus on one example of the delicate treatment of video integration within the interface.

The characters are divided into six worlds: Mind, Power, Body, Senses, Discovery and Design. Each world has a different visual, musical and interactive treatment. The interface for the Body world is centred on that of an actress recorded on video and integrated within a markedly graphic environment. The integration blurs boundaries, reinforcing the positive perception of the contrast of the integrated media.

Depending on which character we choose, the girl does one thing or another and explains something we have chosen, setting up a subtle and complicit game: if we choose Pelé, she plays with a ball; if we choose Coco Chanel, she's on a catwalk... This excellent visual integration is complemented with a comparable conceptual integration. As we demanded previously, the whole play of the media integration is secondary to the coherence of the discourse. Although it was only very recently that the imperceptible mixture of video and graphics was technically possible, there is no gratuitous use of this resource here.

In a very old and quite eclective product, the first edition of the CD-ROM for the Louvre (Montparnasse Multimedia 1994), the best selling interactive product of all time, we can find another extraordinary example of how interaction allows for unexpected forms of handling media. It can be found as a sub-option of one of the most standard options in all interactive products that focus on pictorial work, namely the magnifying glass or zoom. At a first level, the Louvre CD-ROM's zoom Louvre doesn't seem special at all: a red box that can be dragged over a miniature of the picture to focus our attention on the enlarged fragment.

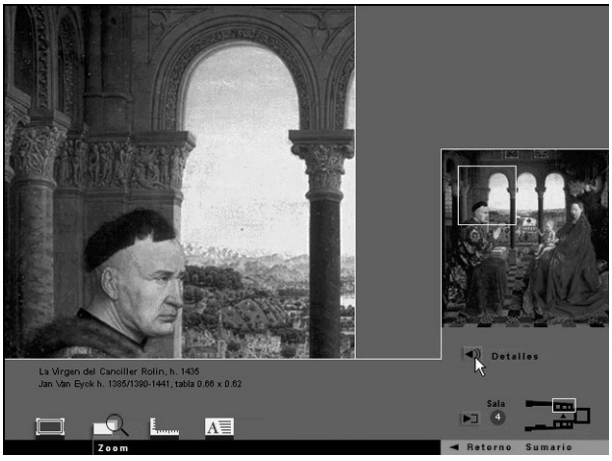
The novelty comes with its "Details" option, accessible while using the zoom. This sub-option starts up a voiceover that, in the typical fashion of museum guides, explains the four or five most important details of the picture. It does so by controlling the square we had dragged. When our attention needs to shift from one detail to another, the square moves following the voice and, in the large window, we can see perfectly what is being explained. We can regain control at any time and move the square as we wish. As in the Orsay case, the voiceover follows us: the guide does what we want.

We can find a similar example in the CD-ROM of the "3ème Biennale d'Art Contemporain de Lyon" (Réunion Des Musées Nationaux 1995) but with an interesting variation. In the section dedicated to each artist there is a brief interview and, irrespective of the language spoken by that person, the video is

Makers of the Twentieth Century

Source: News Multimedia, 1996

Le Louvre, 1994



Source : Montparnasse Multimedia 1994

3ème Biennale d'Art contemporain de Lyon, 1995

Source : Réunion Des Musées Nationaux 1995

subtitled in French and English. Instead of proceeding in a fragmented way from shot to shot, following the timing of the video, the text moves from right to left, even exceeding the rectangular limits "reserved" for the video and "invading" the rest of the interface, its shape reminiscent of how a scroll works.

In fact, the subtitled text functions like a scroll. Dragging it in any direction, we can control the point of the video and corresponding audio. Once again space controls time, in this case physically intervening in an element that is so indivisibly associated with sequential image, namely subtitles.

Conclusions

This is an open article. Its aim is to propose rather than conclude and that is why it ends with some examples that suggest ideas. These are quite diverse examples but, in all of them, we can expect users to be aware, to some extent, that they are taking part in a different way of configuring media. However, in this approach, it seems as if users are meant to gently perceive of their actions. Taking control of the subtitles in an interview, commuting between the lineal explanation of a picture's details and our control, surfing through the space of a cylindrical collage or allowing oneself to be carried along by a voice, experiencing the many possibilities of an expanded comic, enjoying a well integrated interface that nonetheless has a lot of contrasts or even discovering an interactive product's structural key in its variation of media all appear to us as enjoyable and natural experiences, a kind of stroll, surfing through a new "space" that is surprising but quickly understandable. We believe they help to construct a kind of "story" in which the user enters and integrates naturally. But that is definitely another story.

Bibliography

Boling, E.; Kirkley, S.; "Interaction Design for multimedia software". *AAIM 4th Annual Conference on Multimedia in Education and Industry*, 1995. <http://www.indiana.edu/~iirg/ARTICLES/multimedia/interactionDesign_MM.html#chick> [Consulted: 15 November 2008]

Bolter, J. D.; Grusin, R. *Remediation. Understanding new media*. Cambridge, MA: MIT Press, 2000. ISBN: 0-262-52279-9

Codina, LL. "El nou sector emergent dels bancs audiovisuals en el World Wide Web". In: *Quaderns del CAC*. Barcelona: Consell de l'Audiovisual de Catalunya, January-April 2003, no. 15, pp. 41-53.ISSN: 1138-9761

Crary, J. *Suspensiones de la percepción. Atención, espectáculo y cultura moderna*. Madrid: AKAL, 2008. ISBN: 84-460-2179-7

Csikszentmihalyi, M. *Fluir*. Barcelona: Kairós, 1997. ISBN: 84-7245-372-2

Index +; flammarion. *Opération Teddy Bear*. [Computer file] Paris: 1996. 1 CD-ROM.

Fibiger, B. *The Semiotics of Multimedia* [Online]. Aarhus: Aarhus University, 1999. *<http://imv.au.dk/semiotics>* [Consulted: 15 November 2008]

Fundació Joan Miró; Universitat Pompeu Fabra; Club D'investissement Media. *Joan Miró. El color dels somnis*. [Computer file] Barcelona: 1998. 1 CD-ROM. ISBN: 84-923925-0-9

Laurel, B. *Computer as Theatre*. 6th reprint. New York: Addison-Wesley, 1998. ISBN: 0-201-55060-1

Microsoft; National Gallery; Cognitive Applications Limited. *Microsoft. Art Gallery*. [Computer file] London: 1994. 1 CD-ROM.

Montparnasse Multimedia; Réunion Des Musées Nationaux; Index +. *Le Louvre*. [Computer file] Paris: BMG Interactive, 1994. 1 CD-ROM.

Montparnasse Multimedia; Réunion Des Musées Nationaux; Le Lab. *Musée d'Orsay. Visite virtuelle*. [Computer file] Paris: BMG Interactive, 1996. 1 CD-ROM.

Murray, J. *Hamlet en la holocubierta. El futuro de la narrativa en el ciberespacio*. Barcelona: Paidós, 1999. ISBN: 84-493-0765-1

News Multimedia; Zappa Digital Arts. *Makers of the 20th Century*. [Computer file] Leighton Buzzard [United Kingdom]: News Multimedia, 1996. 1 CD-ROM.
ISBN: 1-897992-03-3

Norman, D. A. *The Design of Everyday Things*. New York: Doubleday, 1988.
ISBN: 0-385-26774-6

Prado, E. "La bretxa digital o el perill d'exclusió de la societat de la informació". In: *Quaderns del CAC*. Barcelona, Consell de l'Audiovisual de Catalunya, January-April 2003, no. 15, pp. 3-12.
ISSN: 1138-9761

Réunion Des Musées Nationaux; Université París 8; Magic Media. *3ème Biennale d'Art contemporain de Lyon*. [Computer file] Paris: 1995. 1 CD-ROM.
ISBN: 2-7118-3207-4

Ribas, J. I. *Caracterització dels interactius multimèdia de difusió cultural. Aproximació a un tractament específic, els "assaigs interactius*". Barcelona: Universitat Pompeu Fabra, 2000.

Ribas, J. I. *Interactius de difusió cultural a Internet* [Online]. Barcelona: Universitat Pompeu Fabra, 2008.
<http://www.iua.upf.es/~ribas/GuioDisseny/Tema8/Materials/interculturals.doc> [Consulted: 15 November 2008]

Rosenberg, J. "The Structure of Hypertext Activity". In: *Proceedings of Hypertext´96*. ACM, 1996.
ISBN: 0-89791-778-2