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Integrated Descriptive Interactivity for Complex Collections (IDI)

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Objectives

The IDI research team is currently designing a prototype for a DVD-Rom digital catalogue. The prototype aims at providing a new type of audio-visual communication and documentation tool. This media design work is conducted in very close collaboration with the museological and publication project of our partner, MAMCO. The project represents a significant contribution in the field of integrated descriptive interactivity, a field in which the HEAA has acquired technological and design expertise through previous research projects (see bibliography items 1 and 2). In concrete terms, our research implies the production of interactive video images, sound recordings and representation, exploration and classification spaces. These items are linked to an elaborate textual database. It is worth mentioning that the project uses mainly light and standard recording equipment. The projected interface is also standard.

The project's main objective is to design, develop and test interactive video and spatial representation procedures, in order to describe the elements of a complex collection in their numerous dimensions and functions. Our research is backed by an extensive database, containing lists, notes, references and commentaries about MAMCO's ten year history. We also have at our disposal an exhaustive and systematic photographic archive of the museum's collection and exhibitions. The interactive video images and sound recordings specially made for this project will be integrated to this exceptional art historical documentation which the MAMCO has built and maintained since its inauguration more than ten years ago.

IDI's primary objective implies two interrelated sub-goals. The first concerns the invention of descriptive interactive video processes and focuses on shooting procedures designed specifically in view of an interactive implementation. The second sub-goal concerns the development of feature-extraction programs which are applied to the interactive digital images. The project's major potential for innovation resides in the interconnections between these two sub-goals. By linking new video-interactivity protocols and other digital media formats to feature-extraction programs the user can access the collection not only in the standard documentary mode but also through the sensitive, dynamic or functional features of the collection elements' digital representations.



A Contribution to Video-Interactivity

The development of interactive chrono-video represents a major aspect of the IDI research program. Video sequences become interactive as a result of the organization of photograms that make up the film. This animation technique is intrinsically different from the interactive animations obtained through computer-generated images as they are used, for example, in video games. It is also markedly different from classical interactive video works produced during the beginnings of digital interactivity, such as Michael Naimark's *Aspen Moviecap* (1980), Lynn Hershmann's *Lorna* (1984) or Luc Courchesne's *Portrait One* (1990). In these works, the user is offered the opportunity to make occasional choices. These choices are presented as bifurcations where the user selects an option and determines the course of the film. In our project of a video based *integrated descriptive interactivity* we design interactive videos in which the user can intervene at any time. To make up for this possibility, we must anticipate not only the effects of the user's actions but also how the video will behave when the user is not active. In order to avoid the impression that the video stops at any point, we decide not to "freeze" on any fixed image. Preparing short animated loops that function as suspension moments and display circular or alternating movements - oscillations or vibrations, solves this problem. Several exits from these transitional loops are possible and can lead to other loops. Most trajectories from loop to loop are bidirectional: they can usually be played forwards or backwards.

What follows is a short description of the techniques involved.

Shooting involves either a standard DV camera or a computer-controlled motorized video camera with zoom and pan-tilt mobility. Travelling camera movements can also be recorded thanks to a computer-controlled rail. The fact that the pan-tilt and travelling movement data are digitalized is of crucial importance for seamless animation and interaction. All the sequences necessary for interactive editing must be shot, if possible without interruptions and with uniform lighting conditions. The video sequences are imported in the computer (in DV format) and exported as a series of photograms. These images are then imported in a Director animation. This animation restores movement to the images while allowing several types of interactive modification.

The structure of an interactive film consists mainly of loops and transitions. The user's interventions can affect its course in several ways: a) triggering of a sequence; b) bifurcations; c) forward-backward directional changes; d) speed.

IDI's descriptive proposal enables the user to have a more intuitive approach to complex collections. This approach goes beyond, yet integrates, a strictly documentary approach. While basic, regular interactivity allows the user to select items and associate and combine information entries, we ground our research on the fact that *interactivity in itself can have specific descriptive effects and uses*. In particular, different types of spatial, formal and content relations can be interactively emulated: between the collection elements themselves, between the elements and their environment and between the elements and the users or receptors. A general principle applied throughout this project is that the viewer can be placed in a situation symmetrical to the shooting conditions: zooms, panoramic and traveling shots as well as combinations of these camera movements.

In our presentation we will try to demonstrate and illustrate these propositions, thereby showing that an integrated descriptive interactivity approach allows a surprisingly rich apprehension of the constituents of a complex collection.



MEDIA INTEGRATION

Although video-interactivity is a central aspect of our research, the projected DVD-Rom integrates several other digital techniques and formats:

- a) An interactive 3-D model of the museum that functions as a spatio-temporal narrative of the museum's history. By moving a cursor along a time-line the user can see the transformations of the exhibition spaces and the titles of the exhibitions that occur at a particular time. All the labels displayed in the 3-D model (exhibition names as well as names of the exhibition spaces) are hyperlinks to the museum's dictionary. Both the dictionary and the 3-D model are navigational tools in the DVD-Rom.
- b) Interactively displayed photography from MAMCO's extensive archives.
- c) Interactive chrono-photography animations, using the digital photographic camera's Frame Movie Shot mode, allowing for higher resolution than chrono-video animations. These animations can be displayed at 1024 x 768 pixel resolution (full DVD-Rom screen).
- d) Standard video sequences
- e) Radio-type voice recordings, specially produced for the DVD-Rom. Temporal markers are attached to these recordings. The markers allow the names mentioned in the recordings to be posted as a list. The items in this list are hyperlinks to the dictionary and to images.
- f) Lists and hypertexts.

Summary

In short, we are designing, developing and testing a new descriptive and documentary medium. Our main challenge is not in the field of interface design, but rather in the exploration of specific and innovative uses of the descriptive potential of video-interactivity and its integration to other digital formats.

The IDI research project began in October 2005 and is scheduled to end in February 2007

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