

# Design Considerations For Interactive Videodisc

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Despite a decade of experience in the use of interactive videodisc in the exhibit setting, we have very little systematic knowledge of what constitutes a successful application of videodisc. Broadly defined, much of the analysis that does exist concerns itself with technical considerations such as the clarity of the screen layout, ways to deal with multiple users, and so forth. However, in this discussion I want to focus attention on an oft-neglected issue that should, in fact, be at the core of the discussion, namely the "design" of the interactive video.

I want to be clear that I am not talking about the "box" (the physical container and monitor configuration), nor about the screen layout (though the value of an easy-to-use, "transparent interface" is quite considerable in dealing with the multiple audiences of museum exhibits). Rather, I am talking about the conceptualization of the interaction. This is the crucial formative stage of shaping the disc (or any other multi-media product); all the broadcast quality production values, elegant screen layouts, and intuitive interfaces in the world cannot make up for an ill-conceived, poorly considered presentation.

As with any other aspect of museum exhibits, the core challenge is to identify the story and determine the right approach to communicating it. One of the most useful paradigms in the field of museum visitor studies proposes that successful exhibits require, in order, attracting power, holding power, and communicating power. Within this context, the screen and its surroundings provide the attracting power, but for the holding and, ultimately, communicating power, an engaging concept (or pattern of interaction) and a clear set of communications objectives are essential. Sometimes interactive video appears to be used more for the sake of bells-and-whistles than because the exhibit planners and designers thought through the range of techniques available and then settled upon interactive video as the proper medium for conveying the message.

As an exhibit designer, I want to talk about some of the characteristic modes of interactive disc design that we have developed during the past 10 years. The simplest design approach is "press a button/see a movie," using the videodisc, in effect, as a more reliable form of VCR. There are many exhibit applications for which this is fine: at a history exhibit, for example, giving visitors a chance to select their own footage to view the topic of their choice, or at a science exhibit, allowing a visitor to see different phenomena accurately

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demonstrated, time after time. This design approach is also suitable for "repurposing," or selecting material from existing discs to create a program usable in a given exhibit, a low-cost approach to gaining the benefits of the technology without the costs of having to create a one-of-a-kind version.

I would like to devote the remainder of this paper to discussing five additional design strategies we have successfully conceived for interactive video, as well as discussing one currently under development. These hardly constitute the entire universe of possibilities; for example, the Interactive Video Science Consortium has developed two videodiscs ("Earth Over Time" and "Beyond Earth"), employing a variety of design approaches suitable for use in many different settings. I want to emphasize here the necessity of thinking through the possibilities inherent in two traditionally different forms - exhibits and multi-media - and the ways in which they can be integrated.

### Diner Disc

The "diner disc" (1983-84) concept arose out of our attempt to find a better way for the public to learn about the nutritional values of different foods in a health exhibit. Good nutrition, we reasoned, is far more than the number of calories or the percentage of carbohydrates that a person consumes; it requires an understanding of a balanced diet, watching for hidden sugars and fats, and being aware of the ways in which different foods interact. We decided that such information could best be transmitted as a series of interactions with a waitress who responds with snappy one-liners, either reinforcing or critiquing the choice. To take fullest advantage of the diner concept and the Los Angeles setting of the exhibit, we placed a touch-screen monitor within a reconstructed diner setting and played the video production for laughs, casting an overly made-up, overweight, "gum-popping mama" as the waitress.

Diner I, produced on a shoestring budget, only allowed a modest number of "food choice" interactions. Based on its success, we designed Diner II (1985), for which we developed a full menu of 72 food selections split between two separate monitors. Each monitor featured its own serving person; in one case, a male waiter, in one case a female. We also introduced a third character, Otto the Chef, who periodically made an appearance. Diner II had two special hallmarks. First, for the Chicago setting of the exhibit we made a particular effort to isolate the food selections to Chicago area favorites. This involved a one-day research trip by the video producer, scriptwriter, and myself to a variety of Chicago restaurants (identified for us by a local restaurant critic) to gather material for use on the disc. Second, we took advantage of the two monitor setup to allow the waiter and waitress to periodically converse with each other. This occurs after a series of trigger "events" unknown to the visitor.

By adding this theatrical element to the interactive video, we were able to produce an additional "WOW" effect. On the other hand, Diner II was not positioned in a reconstructed diner, but rather in a piece of exhibit cabinetry, which we believed was not as effective in terms of creating the overall message context.

There have been at least two other diner discs developed, one a historic diner, with which we were not involved; we take this as a further indication of the success of this approach.

### **Design Your Own**

We developed the "Design Your Own Plane" (1983-1984) exhibit for the Aerospace Museum at the California Museum of Science and Industry in Los Angeles. The purpose of this exhibit was to allow the public to understand that design is a complex process of tradeoffs among user needs, available technology, cost, and schedule. As with Diner I, this project was produced on a shoestring; as a result, we minimized the options. Visitors were allowed to select from a computer graphic display how many passengers they wanted on the plane, what kind of plane they wanted, and what kind of use they were going to make of it. They were then provided with footage of the plane they had "designed."

Although conceptually sound, we felt that Design Your Own Plane lacked depth, and therefore did not really get across the message or take full advantage of the disc's interactive capability. Thus, when we designed the Maritime Center at Norwalk, Connecticut, we developed a much more sophisticated version of this program called "Design Your Own Boat" (1987-88). In this case, the visitor interacts with a naval architect. The monitor is positioned within a real naval architect's desk and file drawers. The drawers are full of drawings of boats; a series of half-hull models complete the authentic feeling of the space. The naval architect guides the visitor through a complex web of decision-making, having to do with the type of boat, the use the boat would be put to, the style the visitor prefers, and related features. Visitors can take pathways away from the main interaction with the naval architect to see close-up features on specific subjects. To keep the exhibit manageable, we planned a universe of 12 boats, one of which the visitor would end up "designing." Even so, the pathways were so complex that we had to write a computer program to figure out which boat went with which particular decision-making tree of visitor choice. The resulting product is quite rich in material about the complexities of boat design. However, it is a rather lengthy program and, in practice, visitors appear to come up in the middle of it, spend a few minutes, and walk off. Even within those few minutes, though, they clearly enjoy their interaction and are able to obtain plenty of information without having to go through the full process of designing their own boat.

### **Lifestyle Commentary**

We designed "Joyce Disc" (1986) for the same exhibit for which we designed Diner II. The overall exhibit was on health; one of the specific subject matters was mental health stress and ways of effectively dealing with it. For the Joyce Disc, we obtained the rights to use existing material of 30-45 second duration concerning stressful family interactions (i.e., sibling rivalry, disagreements between step-parents and children, etc.). This material was originally produced for use by social workers and was intended in its initial form to stimulate discussion between the social worker and his or her clients.

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In place of the social worker, we used Dr. Joyce Brothers. At the end of each of the sequences, the visitor was given four choices as to what he or she would do if faced with this particular stressful situation. Dr. Brothers would then comment on the choice the visitor had made and add additional commentary concerning ways in which the stress could be diminished.

Several years later we designed the "Lifestyle Choices" exhibit (1988-89) on the subject of substance abuse. We applied the same conceptual methodology of involving the visitor in a particular set of circumstances, and then allowing the visitor to make a choice or choices and learn something about the consequence of those choices. Five substances were chosen for five different vignettes: cigarettes, beer, hard liquor, marijuana, and cocaine. Since the exhibit was aimed at teenagers, we selected a teenage actor or actress to handle each one of the substances. Based on the widely held belief that teenagers are introduced to substances by peers whom they respect and/or want to be as "cool" as, we set up each of the initial vignettes as an attempt by the actor or actress to draw the visitor into the use of the substance. The visitor was then given a chance to select "yes" (I do want a beer/hit of cocaine), or "no" (I don't). They would then see the sequence play itself out, often revealing the actor or actress as someone who, in reality, was not as "cool" as he or she may have seemed. After the scene played itself out, the visitor was given a chance to "interview" the teenager with a series of questions appearing on the screen. The teenage actor, in character, answered the question, generally in a misleading fashion (i.e., to the cigarette smoker: Aren't you worried about cancer? Answer: Nah, that's only for older people), and then the screen froze while a message appeared on the screen providing the true facts of the situation (for instance, in the cigarette scenario it was pointed out that the earlier you start smoking, the greater your risk of getting cancer).

While the video discs convey their message, the initial character moment is somewhat lengthy; some visitors leave before the full sequence has occurred. Once the interactions begin, people stay with the exhibit all the way through.

### Whole TV Disc

In designing an exhibit for the Maryland Science Center in Baltimore, Maryland entitled "Your World: Maryland, Science Behind the Scenes" we wanted to introduce visitors to the science facts underlying their everyday lives. One of the most interesting possibilities was taking visitors behind the scenes to a TV broadcast and allowing them to learn about the science of TV. Using a prominent local broadcaster as our host, we created the Whole TV Disc (1986), a linear sequenced videodisc on how a news story is created. The story is broken into a series of narrated chapters (newsgathering, editing, transmission, etc.). This presentation occupies the bulk of the screen; a vertical band on the right hand side is reserved for scientific or technical terms used by the host in the tour. As each term comes up, the visitor is allowed to touch it, which loops him or her off to a 30-45 second explanation of the science of that term, i.e, miniaturization, satellite broadcasting, etc. For the entire time that the term stays on the screen the visitor can touch it and receive a response. Thus, while the overall presentation is linear from the initial moment of sending a reporter

out on a story to the final broadcast, the explanatory loops are interactive and afford much more random access. This "key word" concept is a valuable tool that has been used in some of the new multi-media products in the marketplace.

## Baseball Card

The baseball card design approach was developed by New England Technology Group, a consultant of ours, for the "Discovering Dinosaurs" exhibit at the Philadelphia Academy of Science. The "dino disc" (1987) featured 20 dinosaur "baseball cards." Visitors could browse through the cards, obtaining basic information about the dinosaurs, or they could loop off into quiz games, areas of additional information about any of the dinosaurs, or other interactive methods of taking advantage of the baseball card information.

We employed this technique in the Maritime Center at Norwalk as well. The Center includes a regional aquarium; we used videodisc to provide information on a number of species that could not be exhibited within the Maritime Center. Otherwise, the methodology was entirely the same as on the dino disc. This approach is particularly useful for taxonomic types of information.

## Living Map

We have conceptualized this approach in order to respond to two distinct but comparable situations: interpretation of a natural site and interpretation of an immersion-type aquarium exhibit. In both cases, for esthetic and practical reasons, we want to avoid a visual overload of signs identifying the variety of natural sights and the number of different species to be seen. The design concept harkens back to the pioneering interactive video, the Aspen disc. Our intent is to "shoot" the site or exhibit in question, then, following upon the work done by Bank Street's Palenque project, to allow the visitor to navigate through the site. Certain aspects of the "trip" will be highlighted as a cue to the visitor of the existence of a menu of additional information. The visitor either takes advantage of this menu and then returns to the precise spot on the tour from which the side trip was taken, or chooses not to "loop" off. Thus, the overall form of the living map is circular, without a specific beginning or end; any visitor can come up at any time during the process and utilize the map.

## Conclusions

1. Interactive video - in fact, the larger range of interactive or multi-media technologies - represents a new form. As such, there needs to be a period of experimentation before some standards and general conclusions can be drawn. However, this does not mean that designers of interactive media should ignore the importance of the design aspect of their project; only careful consideration of the possibilities inherent in this new form will encourage standards to develop.

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2. Given the modest resources generally available to museums, creativity and effective use of resources are crucial to a successful application of interactive video to the environment.

3. The most successful applications of interactive video we have used give the visitor many, many chances to make decisions. Frequency and quantity of interactions are what the visitor is looking for in the museum. For example, while the material in the Lifestyle Choices disc is very compelling, because the first 90 seconds go by without the visitor having a chance to interact, we do lose some percentage of the visiting public. On the other hand, Diner II, which is entirely made up of decisions with quick feedback by the disc, is extremely successful.

4. The exhibit environment has a lot to do with the success of the video. Diner I and Design Your Own Boat, both of which are placed in authentic environments suitable to their subject matter, achieve an extra level of success because of the contextual nature of their settings.

5. Resources in a museum or public learning environment are better expended on the programming and disc design than on high-end video production. In only one case, the Lifestyle Choices disc, did we go with what might be considered network quality video production standards. All the other projects were done on tiny to medium-sized shoestring budgets. Museum visitors are not looking for a high-quality video production; they are looking for learning and entertainment.

**Note:** Portions of this paper appeared in an earlier form in the *A&A Monthly on Interactive Entertainment*.